The Builder.

VOL. LXXVI. No. 2922. FEBRUARY 4, 1899.

ILLUSTRATIONS.

Scheme for the New Playing Fields, Eton College.—By Mr. F. Inigo Thomas ..... *Double-Page Ink-Photo.*
Design for a Royal Mausoleum, by Mr. J. B. Fulton: Tite Prize Drawings (Institute of Architects), 1899 ..... *Two Single-Page Ink-Photos and Two Single-Page Photo-Lithos.*
The Princess of Wales Theatre, Kennington.—Mr. W. G. R. Sprague, Architect ..... *Single-Page Photo-Litho.*
Mansions and Flats, Sloane-court, S.W.—Messrs. Rolfe & Matthews, Architects ..... *Single-Page Photo-Litho.*

Blocks in Text.

Block Plan of the Fire Prevention Committee's Testing-Works ..... Page 111
The School-room, King's School, Canterbury ..... „ 113
Princess of Wales Theatre, Kennington ..... Page 118
Illustrations to Student's Column ..... „ 121

CONTENTS.

A Note on the Decoration of St. Paul's 105
Gas Consumers' Complaints 106
Non-Operative Operatives 106
Notes 107
Greek Architecture 109
The Fire-Prevention Committee's Testing Station 111
Timber Seasoning by Electricity 111
Architectural Societies 112
Engineering Societies 112
King's School, Canterbury 113
Court of Common Council 113
Metropolitan Asylums Board 114
The London County Council 114
The Architectural Association Discussion Section 115
Competitions 115
The National Association of Master Builders 115
Applications Under the London Building Act, 1894 115
The Building Trade Dispute 116
Glasgow School of Art 116
The London School Board and the Assistant Architect for Repairs 116
Books:—Charles F. Mitchell's "Building Construction"; Charles F. Mitchell's "Building Construction and Drawing"; Frederick Davis's "Romano-British City of Silchester"; "Journal of the Sanitary Institute"; Sidney Barwise's "Purification of Sewage"; Alfred A. Hudson and Arnold Inman's "Law of Light and Air"; T. W. Saunders's "Law of Negligence"; R. M. Minton-Senhouse and G. F. Emery's "Accidents to Workmen" 116
Books Received 117
Scheme for Laying Out New Playing Fields, Eton 118
Design for a Royal Mausoleum 118
Princess of Wales Theatre, Kennington 118
Sloane Court, S.W. 118
The Arts and Crafts from Another Point of View 119
Labour in the Building Trade 119
Do Workmen Shirk? 119
Liability of Architects 120
Hull Central Library Competition 120
Metropolitan Drinking Fountain Association 120
The Student's Column—Architectural Hygiene.—V. 120
Obituary 122
General Building News 122
Sanitary and Engineering News 123
Stained Glass and Decoration 123
Miscellaneous 123
Capital and Labour 125
Legal 125
Meetings 127
Recent Patents 127
Some Recent Sales of Property 128

A Note on the Decoration of St. Paul's.

SEVERAL letters have appeared in our columns during the last two or three weeks from architects, commenting strongly on the manner in which the interior of St. Paul's is being treated in carrying out Sir W. Richmond's scheme of decoration; and we printed one last week, a very moderate and very sensible letter, from Mr. Little, a member of the Society of Painters in Water-colours. We have received two other letters from architects this week, but do not think it worth while to continue the correspondence, which is rather a repetition, and in which we observe that none of the leaders of the architectural profession have taken part; whether from indifference, or because they are averse to attacking the distinguished painter engaged on the work, we cannot say; the latter is the more probable reason.

We are not surprised that there should be a good deal of strong feeling in regard to some features in the decorative scheme that is in progress; but the criticisms are rather discounted by the fact that some of them are too strong and all of them come too late—for the present section of the work at all events. Some years ago, at a meeting at the Society of Arts, when Sir W. Richmond read a paper on the subject (when only one bay of the choir roof had been done), the Editor of this journal, in the course of the discussion following the paper, ventured to suggest that although the method employed of forming the mosaic with rather rough cubes set in cant-wise, so as to give a rich and soft texture to the mosaic surface, was excellent in itself, the character of the work (as well as of much of the design) was not suited to the character of a Renaissance church like St. Paul's, and would be more in place in a building of Byzantine type. The point, however, was not appreciated, and the only apparent result was to make the lecturer and the chairman (one of the Ecclesiastical Chapter of the Cathedral) rather angry. They will now be likely to find that everybody will be telling them what they refused to listen to then.

When Sir W. Richmond's coloured studies for the decoration of St. Paul's were first exhibited at the New Gallery, they created a most favourable impression; and the revival of the system of setting the mosaic *in situ* was also an interesting development. Of course it was easy to see at a glance that the decorative scheme as a whole was of a kind which Wren never for a moment contemplated; but then it might reasonably be replied that Wren's ideas of coloured decoration, like those of other Englishmen of his day, were so very superficial that they could hardly be taken too seriously into account. If the possible paintings or mosaics which Wren spoke of for the cupolas and the apse had been carried out in his day, it is hardly likely that they would have been such as we should now admire, though they would no doubt have been more in keeping with the building than the recently executed decoration. There is a good deal that is very good in the choir roof decoration; the rich and soft-looking texture of surface obtained by the special treatment of the mosaic is a charm in itself; but the further the work has been carried the more evident has it become, first, that it is out of keeping with the architectural character of the building; secondly, that it is open to the great difficulty that, having embarked on so rich a scheme of colour in the roof, it is impossible to know where to stop—in a vertical sense at least; horizontally we may come, as we shall have to suggest, to a boundary; but vertically the difficulty of staying the hand seems insuperable. There must be some colour below to support all that colour above.

One point about which our correspondents complain is the treatment of the windows—the "confused gloomy windows," as Mr. Little calls them. When we saw the designs for these windows on paper we liked them very much; they seemed to us to have solved the problem of giving something like Gothic richness to a window which was nevertheless not unsuitable to a Renaissance building; even now we like them in themselves; and surely they are to be preferred to the windows cut up into little plain squares, in the remainder of the cathedral. We confess however, not to have foreseen—what is apparent enough now—the extent to which they would rob the building of light; which again is out of keeping for a Renaissance interior, of which brightness and cheerfulness are the essential qualities. And one is rather surprised that Sir W. Richmond, as a painter, did not himself perceive that if he filled the roof with coloured mosaic designs rather too small in character for their position (for that is one of the mistakes), he would require plenty of white light to see them by. As it is, the effect of the choir now is decidedly gloomy—rich, no doubt, but gloomy; and it is to be feared these windows are a mistake under the circumstances. If the interior had been left uncoloured they would have improved its appearance very much; but now they stop out light that is wanted. We cannot wish that the windows should have been left in their original state; but they might have been treated in a decorative manner which would not have darkened the building so much.

The strictures which have been made in regard to the walls being covered with stencil-like decoration, &c., are rather exaggerated. There is only some painted scroll decoration behind the lettering of the text on the frieze, and some similar decoration on the archivolt of the secondary arches under the dome, to connect the one portion with the other. The lettering of the texts requires some decorative treatment behind it, to give scale to the letters; we do not like this ornament very much, certainly, especially on the archivolts where there is no lettering, and where it looks weak and fidgety; but it is not quite so serious a matter as it is made out to be.

The fact is that, unless all the mosaic is to be removed from the choir again, the work cannot be stopped at the point where it now is, and the criticisms come too late. In spite of mistakes, it has been work very well intended, and it has unquestionably, in a sense, added to the interest and beauty of the interior. It seems essential that the portion under the dome should be completed so as to harmonise to a certain extent with the choir; but here we suggest that there should come what we have called the horizontal boundary of the decoration. The nave and transepts may very well be left as Wren left them, and intended to leave them. We should then have that portion of his architecture entirely intact and unaltered; and there would be nothing unsuitable in the fact of having the colour decoration concentrated on the portions of the cathedra

specially used for worship. Only it must be remembered that the decorative treatment of the dome and the drum underneath it is a matter of the most vital consequence to the whole effect of the interior. It would be easy to ruin the building by a mistaken treatment in the decoration of the dome. A year or two ago the Dean of St. Paul's wrote to the *Times* asking for funds to decorate the dome, without the slightest intimation as to what it was proposed to do. Matters cannot be carried on in that light-hearted manner. Before anything is ordered or any money subscribed, we ought to know exactly what it is proposed to do, so that public opinion may be expressed before it is too late. And the opinion of a jury of architects ought to be taken on the subject before anything irrevocable is done. We have not the slightest doubt, of course, that Sir W. Richmond considers himself quite able to decide the whole question without any architectural interference. But that, unfortunately, is one of the points on which we cannot all agree with him.

GAS CONSUMERS' COMPLAINTS.

IN all directions complaints are to be heard regarding the quality and price of the public gas supply. Gas companies are charged with supplying bad gas, Local Authorities are reproached for neglecting to guard the consumers' interests, or where the gas is supplied by the Local Authority, with gross mismanagement, and builders are accused of furnishing their buildings with inferior and inefficient gas fittings.

It is true that these complaints are somewhat lacking in novelty, for since its infancy the gas industry has been subject to the frequent spasmodic attacks of consumers of gas, and the increasing number of complaints is but an indication of the fact that the number of consumers is rapidly increasing, and that gas is becoming more and more extensively used as a domestic convenience. Everywhere the proportional consumption of gas during the hours of daylight appears to be steadily increasing, a fact which demonstrates the increasing popularity of gas as a fuel, and affords hope that the present generation may yet see the atmosphere of our large towns rendered clearer and brighter by the general substitution of smokeless for smoky fires.

According to statistics published in the *Gas World*, some 500,000 penny-in-the-slot gas-meters have been fixed during the last eight or nine years in consumers' premises in this country alone, and as most of these are fitted in the homes of workingmen who use gas largely for cooking purposes, it is evident that the general substitution of gas for coal is no longer beyond the "sphere of practical politics."

Now the value of gas to the consumer depends mainly upon the pressure at which it is supplied, and its illuminating and calorific value. The standard of illuminating power and of pressure is regulated by various Gas Acts, and it is in the power of the different Local Authorities to see that the gas complies with the provisions of these Acts. Hitherto a standard calorific value has not been enforced, but should some means be found of cheaply enriching water-gas to the sixteen-candle standard, without at the same time increasing the calorific value of the water-gas to approximately that of sixteen-candle coal gas, it is probable that a calorific standard would have to be adopted.

It is not our intention to discuss the prices charged for gas in different parts of the country, since these prices are necessarily regulated by local conditions, but a few words may be devoted to the subject of the price of gas in London, a subject which is just now agitating the minds of many gas consumers and Local Authorities. In London we have three distinct gas companies supplying gas of the same quality, and yet charging widely different prices, with the additional anomaly that the company which supplies nearly double the quantity of gas sold by the two remaining companies together, is the company which charges the highest price for gas. Those consumers of the Gas Light & Coke Company who live north of the Thames are charged 3s. per 1,000 cubic feet of gas, while the consumers in the district of the Commercial Gas Company are charged only 2s. 6d., and the consumers in the district of the South Metropolitan have to pay only 2s. 2d. per 1,000 cubic feet of gas. It is only fair to add that whereas meter rents are still charged by the two latter companies, they have been abolished by the former; but this is a trifling matter compared to the difference in prices. That a small manufacturing company should have to charge more than a large one is comprehensible, but we fail to understand why the largest manufacturer should have to charge a price so much greater than its neighbours, and it is not surprising that consumers in one part of the town should object to paying 38 per cent. more for gas than consumers in another part of the same town.

We do not anticipate that any startling revelations will result from the inquiry of the Select Committee that was appointed during the last session of Parliament to inquire into the charges made for gas in the metropolis, nor do we know whether the order of reference can be so construed as to include an inquiry into the alleged faulty management. Such errors as may have been made in finance or in management are apparently errors of the past, but it would be interesting to know whether there is any truth in the rumour that the Beckton works, the largest in the world, are a financial failure, as compared with the smaller works; and if so, to what extent.

But to return to the complaints of "bad" gas. The fact that in London complaints are constantly being made that the gas companies are supplying gas of very inferior quality is excellent evidence that, while a gas company is sending out gas of more than standard quality, it may in all sincerity be accused of supplying bad gas. For in London there are over twenty testing stations, well distributed throughout the Metropolis, and in these stations the gas is *daily* tested by thoroughly qualified officials paid by the controlling authorities. Hence the assumption that any of the London companies persistently send out gas of less than standard quality is mere nonsense. In London at least one must look for some cause other than the perfidy of the gas manufacturer, for the undoubted fact that a large number of consumers obtain a very unsatisfactory gas supply.

Nine complaints of bad gas in every ten are due to the inefficiency of the supply, and not to the inferior quality of the gas. This inefficiency may be due to faults in the gas company's fittings, or to faults in the consumer's fittings. The size of the service pipe from the street main to the consumer's meter may be too small, or the service may have become partially blocked with naphthalene, tarry matter, or water; or a ten-light meter may be retained where a forty-light meter should be fixed. In any of these cases the consumer should communicate with the company. But the fault which most commonly calls forth the complaint of bad gas is the insufficient capacity of the service pipes within the building itself. Everywhere we see gas fires and gas stoves supplied by services originally intended for some ten or fifteen flat-flame burners only, and often used, especially in the winter time, simultaneously with the burners. And who does not know the house where the dismal gas-flame in the dining or smoking-room jumps suddenly to a satisfactory brilliancy so soon as the servants turn off the other burners in the house and retire for the night? The remedy is a simple one; but when, as very often is the case, the pipes meander beneath plastered walls and covered floor-boards, the annoyance and cost entailed by changing the size of the service-pipes are by no means trifling. Consumers frequently insist upon having extra gas-brackets and gas fires fixed to existing services, and the result is naturally very often far from satisfactory.

In large towns the gas is generally too frequently tested to allow of any great deficiency in quality, and as it is the desire of the gas company to sell as much gas as possible, it is not often that a sufficiently large meter, or service between the street main and the meter, is denied. The company's responsibility terminates at the meter, and should the internal fittings be at fault, the consumer has usually to bear the expense of any alterations he may require. The cost of substituting a large for a small service is considerable in large buildings, but economy in this direction will inevitably lead to dissatisfaction with the gas supply, and probably to unjust vilification of the gas manufacturer.

NON-OPERATIVE OPERATIVES.

IF things go on much longer as they are, the word "operative" will acquire a new meaning, as signifying not a man who does work, but a man who refuses to do it; or it may be defined in future dictionaries thus:—"*Operative*—a man engaged and paid to do certain work, who endeavours to avoid doing it himself, and to prevent others doing it." That seems to be what it is coming to.

It is possible that the action of the "National Association of Operative Plasterers," as they humorously style themselves, may have the result, other than was intended, of bringing about a check in this system of striking work and dictating to employers. Things have been pushed to the point when even the most long-suffering of employers of labour (and they are in these latter days a very long-suffering class) may be wrought to a determination to put up with this kind of thing no longer. The National Association of Master Builders have at all events gone so far as to call upon the "Operative" Plasterers for an assurance

that they will abandon certain lines of action which are duly set forth in the Master Builders' communication. The mere enumeration of the masters' causes of complaint, reported in another column, indicates the exercise of an unreasonable and petty tyranny such as seems almost incredible. One gathers from this that it is a constant practice to endeavour to coerce foremen and superintendents of plasterers' work into joining the mis-named Association, and if they refuse, to visit their recusancy on the contractor by threatening to withdraw all the men from the job. One would hardly imagine (to use an old-fashioned phrase) that the blessing of Heaven, or of earth either, could rest on an association whose ranks were recruited by such means; and it is a curious example of the difference in the laws of honour and morality which appear to govern the conduct and form the standard of the upper and the lower classes. If any society or association of a professional standing were to adopt any similar means of compelling people to join its ranks, or making it inconvenient to them not to do so, such association and all connected with it would be absolutely disgraced in public opinion. But an association of "operatives" may do anything, apparently; no one expects honour or fair dealing from them. The refusal to work on buildings where any men are employed who do not belong to the sacred association is another form of the same tactics. Suppose a certain number of architects, members of the Institute, who had been invited to take part in a competition, were to send in a statement that they refused to compete because an architect who was not a member of the Institute had been included in the list, and demanded that his name should be struck out; what indignation would be expressed, what contempt passed upon the Institute, as a body capable of so mean a proceeding! Yet in the case of an association of "operatives" this is to be regarded as a natural and every-day kind of proceeding, so common as hardly to call for comment, and regarded by the members of the Association themselves as a spirited policy. If working-men want the upper classes to respect them, they must give up practices which in the upper classes are considered disgraceful. But even more preposterous than these is the practice mentioned in the fifth heading of the Master Builders' "Schedule of Charges," of refusing to accept the employer's decision as to whether certain work is to be done, of right, by the plasterers or by some other workmen, and proceeding to the use of the usual weapon—withdrawing all their members from the work. The employer is the natural arbitrator in such a case, and certainly is the person who knows best which hands are best fitted to carry out the work; but the plasterers, forsooth, are to arbitrate in their own cause, and go off the work in dudgeon if they are not permitted to do so; a kind of behaviour, again, which would be regarded as utterly impossible in the higher ranks of society.

Two letters which we print in the present issue draw attention to the general decline in good work and the general increase, among building artisans, of the endeavour to do as little work as possible for the wage, and to hinder others from doing more. As our correspondent "Clerk of Works" puts it, formerly one man endeavoured to do as much as another; now he endeavours to do as little as another. There is no meaner or more contemptible principle of life. We once heard it remarked with praise of a man in a position of trust in the professional class — "he always does more than is expected of him"; and that is the honourable aim of not a few men in English professional and official life. It is such men as those who are universally trusted and respected, and in the end rise high. But the object of the "operative" seems nowadays to be, always, if possible, to do less than is expected of him; in other words, less than he is paid for. This appears, in fact, to be part of a system now; and we may hope that there are individual workmen who have a higher ideal of duty than that, and who would willingly do better than their associations will allow them to do. But if it is useless to appeal to the sense of honour of those who act on this kind of system, an appeal may perhaps be made with more success to their self-interest; if they can once be made to realise the fact that by cutting down work to a minimum they are cutting their own throats by destroying the trade which gives them a livelihood, they may perhaps listen to this argument though not to that of honour.

An important point is touched on in Mr. Nicholson's letter; the fact that contractors are bound to deliver work by a certain period, while they have to employ workmen on whose labour they cannot reckon. And he suggests that by the Unions themselves a man ought not to be considered a fully-qualified mechanic unless he turns out work at not less than the average rate. Some such reform must certainly be carried out, unless the very name of "operative" is to become a byword, a synonym for a man who does nothing and gets as much as he can for it.

NOTES.

The Workmen's Compensation Act.

THE decisions of County Court Judges have not the same binding force as those of a Divisional Court of the Queen's Bench Division or of the Court of Appeal, but they should sometimes be noted. One recently given by Judge Stonor is of some importance. A man working inside a building on a trestle claimed compensation for injury received in the course of his work. The building was above 30 ft. high, but the man was not working on a scaffold on the building, and the Judge held that he was not entitled to compensation. The decision is no doubt right, but it is another example of the absurd injustice of the Act in regard to men who work on buildings. We have called attention to it before, but there can be no doubt that every succeeding example shows the need of amending the Act. If it is good for workmen on high buildings, it is equally good for workmen on low buildings. These instances of injustice occur often in the case of smaller workmen, who, in many ways, are those to whom the Act would—if applicable—be the more beneficial.

Educational Areas.

THE recent meeting of the Executive Committee of the County Councils Association shows pretty plainly that, in the opinion of the Local Authorities who are best able to judge, the areas for secondary education should be the administrative counties (in which term is included county boroughs), with, possibly, here and there modifications. Until the Government produce their Bill, it is unnecessary to consider this particular detail at length, but we can hardly doubt that the county is the only area which can be justified. It is most undesirable to create new local bodies; indeed, it would be better that their number should be diminished. It cannot be doubted that the District Councils should be the educational authority for elementary schools in place of School Boards. There would then be a systematic organisation of education in the country districts — the District Councils having charge of elementary, the County Councils of secondary, education; though we fear that the voluntary schools could not be forced into the system at once. It is probable that if the County Councils become the area for secondary education, this fact will give an impetus to the creation of larger areas for elementary education.

"Practical Sanitary Science."

IT has often struck us as matter for surprise that young architects do not more frequently sit for the examination of the Sanitary Institute in "Practical Sanitary Science." Of course the subject is included in a general way in the Royal Institute of British Architects' Final examination, but a comparison of the questions set by the two Institutes shows that the examination in "Practical Sanitary Science" requires the more detailed and more extensive knowledge. If students think it an easy matter to obtain the certificate of proficiency in this subject, a perusal of some of the questions which have already been set will disabuse their minds of that opinion. The same moral is pointed by the proportion of failures among the candidates during the year 1898; out of forty-one candidates who presented themselves for examination in London and the provinces, no fewer than twenty-three were plucked, a proportion of failures equal to 56 per cent., and in the last two examinations only two candidates passed out of twelve, the failures amounting to 83 per cent. We venture to think that we should hear less of "Sanitary Specialists" and "Sanitary Engineers" if architects would take more interest in sanitary matters, and we know of no better course of preliminary study than that which is required in order to obtain the Sanitary Institute's "Certificate in Practical Sanitary Science."

Electric Wiring Rules.

THE three papers on electric wiring rules, by Messrs. Crompton, Wordingham, and Pigg, which were recently discussed at the Institution of Electrical Engineers, agreed in stating that the present diversity of rules and regulations adopted by fire insurance and supply companies was little to the credit of the profession. For example, as Mr. Drake pointed out, one fire insurance company insists on there being a fuse in every ceiling rose, and another that no ceiling rose should have a fuse. Numerous other cases where the rules are in direct conflict could easily be cited. Professor Ayrton seemed to think that the fire insurance companies were largely to blame for the present want of agreement, but the fire insurance inspectors who spoke subsequently showed that they were really very moderate in their demands as compared with the supply companies, and

some of them even expressed their willingness to accept the Institution rules in their entirety. Mr. Crompton and Mr. Wordingham were evidently of opinion that the rules of the Institution were nearly perfect. This, however, is far from being the case, from the consumer's or the scientist's point of view. For example, the resistance of copper is given wrongly, so that we have the anomaly of ordinary soft commercial copper having a conductivity of 102 per cent. when referred to the Institution standard. Again, no test is provided for the resistance between the mains, so that a consumer's meter may be continually registering with no lights on, although his installation has passed the Institution's tests. The worst of the rules is the one concerning insulation resistance. Instead of quadrupling the insulation resistance when the voltage is doubled, the rule only requires that it should be doubled. It is, therefore, inequitably favouring high tension supply at the expense of supply at lower pressures. Again, no distinction is anywhere made in these rules between alternating and direct current supply, or between a two-wire system and a five-wire system. The rules may represent a compromise between the opinions of the various members of the Institution Committee, but an inequitable and unscientific compromise will not command the respect of either the public or of expert electricians.

Memorials of King-street, Westminster.

ON January 16, 1599, at his lodging in King-street (now being demolished) died Edmund Spenser, "the prince of poets in his time," for lack of bread—as Ben Jonson told Drummond of Hawthornden. He was honourably buried, at the charges of the Earl of Essex, in the south transept, Westminster Abbey—the first poet, after Chaucer, buried there; and his monument, restored in 1778 by Mason, was erected and inscribed by Lady Anne Clifford, Countess of Dorset, Pembroke, and Montgomery. In the account book at the Soane Museum, of "workes done by Nicholas Stone, sen.," is an entry:

"1625. Monument for Mr. Spencer the Poet. The Countess of Dorset payd me 40*l*."

The original inscription, long ago effaced, stood thus:—

Hic prope Chaucerum situs est Spenserius, illi
Proximus ingenio, proximus et tumulo.

King-street can boast of many famous inhabitants; amongst them were Oliver Cromwell, when Lieutenant-General, who was rated for a house on the west side between the "Blue Boar's Head" (rebuilt in 1750) and Ram's-mews, whither he removed, it seems, in 1643 from Long-acre (where Nicholas Stone was his next neighbour), remaining there until 1649; Dr. Sydenham, in a house on the site of Ram's-mews; Lord Howard of Effingham; the Earl of Dorset; Sir Thomas Knyvett, who captured Guy Fawkes; Julian le Notaire, bookbinder, in 1498, who removed *circa* 1503 to the "Three Kings," without Temple Bar, and whose notarial mark is known to collectors. The October Club used to meet at the "Bell," *temp.* Queen Anne. On January 23, 1683, Evelyn visited Sir Francis North in King-street to congratulate him upon his succeeding the Earl of Nottingham as Lord Keeper. The house was the first one built of brick in the street: and he mentions in his diary, February 27, 1695, that Charles II. was minded "to buy all the street and build it nobly. . . . This might have been done for the expence of the Queen's funeral, which was 50,000*l*., against her desire."* At that time King-street formed the main thoroughfare southwards to Westminster from Charing Cross, though the road was so ill kept that faggots were laid down when the Sovereign went in State to Parliament. The gate, standing at the south-west corner of the (old) Privy Garden, where is now Downing-street, was built by Henry VIII. and pulled down in 1723. It was 35 ft. 6 in. deep, and had a carriageway 12 ft. wide, with two footways, 4 ft. 6 in. in width. The northern, the "Cockpit," or "Holbein's," Gate, standing opposite the later Dover House, was removed in 1750. Sandby made designs for its re-erection at the end of the Long Walk, Windsor.

The Late Mr. Harry Bates.

THE unexpected death of Mr. Harry Bates, at a comparatively early age, is one of the most serious losses that English sculpture could have experienced at present. As a sculptor he combined the power of ideal poetic conception with that of vigorous and powerful modelling. His "Hounds in Leash" was one of the most powerful examples of the display of energy of action in sculpture which has been seen of late years, while his various bas-relief subjects from Virgil recalled the ideal feeling and purity of line of Flaxman. He treated round or bas-relief with equal success. His great equestrian monument to Lord Roberts, which stood in the court-yard in front of the Royal Academy two or three years ago, though not superior to some of his other works except in scale, made a great impression on the public, and was certainly one of the most effective and dignified pieces of monumental work which has been produced by an English artist.

New Academicians.

THE Royal Academy have elected the veteran French painter, M. Jules Breton, Honorary Foreign Academician; an honour which comes late in the day, for M. Breton, who may almost be considered to be the founder of the modern French school of paintings of peasant life, the precursor of Bastien-Lepage and Millet, made his reputation in the last generation rather than the present one, and by the popular frequenters of exhibitions his name is possibly almost forgotten. The honour paid him by the Academy may serve at least to revive the recollection of his work and his fame in this country. The three English Associates elected were Mr. Arthur S. Cope, Mr. Alfred East, and Mr. Goscombe John. No one will quarrel with the selection. Mr. Cope has been steadily rising into reputation as a very refined portrait painter; Mr. Alfred East is the author of many beautiful landscapes, marked rather perhaps by sentiment and delicacy of effect than by power; but we think the election of Mr. Goscombe John is the one which will be received with most satisfaction in the artistic world. He is a sculptor who, though he has not hitherto shown remarkable power of ideal conception, has the root of the matter in him; his treatment of the figure is always marked by that kind of knowledge which in sculpture is power; his work is never commonplace, and is characterised by a strong individuality, and he is an artist whom we may expect to produce even better works than we have already had from him.

* Queen Katharine, *ob.* February 6 was buried on March 5, 1695.

Mr. Fulleylove's Sketches of Oxford.

WE rather question whether Mr. Fulleylove has added to his reputation by the collection of small oil sketches of Oxford now on view at the Fine Art Society's Gallery. The former set exhibited ten years ago, of Oxford sketches in water-colour and pencil, interested us much more, and showed the architectural character of the buildings a great deal better. In the present set the artist professes himself to be rather concerned with the general picturesque effects of Oxford than with special buildings. For small sketches, they are rather heavy and loaded in execution, and they do not, to our thinking, convey truthfully the real colour and effect of Oxford. The best are those of places outside the city, and partaking partially of landscape character, such as "Iffley Mill from the River" (48), "Blenheim Park" (32), "Almshouses at Abingdon," and "A Farmstead, Radley" (38). Among the views in Oxford may be mentioned "Holywell-street" (43); "Bishop Heber's Tree" (58), with the mass of white cloud behind it; "New College Tower from the Sheldonian Theatre" (68), an excellent bit of colour; and, certainly the best of all, "St. Mary's Porch and the High" (71), in which the porch with its twisted columns is seen in the foreground, and a distant view of the High-street and its buildings winding away in the sunlight. This is a beautiful little picture, but few of the views come up to this standard, and the exhibition is rather a disappointing one as a whole.

The Goupil Gallery.

AT the Goupil Gallery there is a "two-man" exhibition of the works by Mr. Wilfrid Von Glehn and M. Monod, an Associate Member of the Société Nationale des Beaux-Arts of France, otherwise known as the "New Salon." Both are "progressive" artists, as the phrase goes. Mr. Von Glehn's paintings are rather decorative panels than pictures; as such they have a good deal of interest. "What Songs the Mermaid whispers to the Gulls" is a very original and effective work in its way,—a half-length of the mermaid with gulls flying round her, and a shimmer of blue and white sea beneath; not real sea (or rocks) but a conventional indication of them. "The Evening Glow-Coast of Brittany" is again merely an effect of Nature conventionalised into a decorative shape. There are also examples of landscape in the ordinary sense, such as "Morning after a Storm" and a "Fresh Breeze," in which there is a fine effect of air and wind, though the sea is treated in rather a mannered way, and there is a predominance of white in many of the paintings which has rather the effect of a trick, and of which one gets tired. The largest painting is a recumbent nude figure with the outstretched plumage of a great swan as a background—again for a decorative effect in white, under the title of "Leda and the Swan." "Decorative panel" would have been just as good a title, and we cannot help suggesting that modern painters might as well dispense with allusions to or illustrations of that very indecent old Pagan legend. The few works by M. Monod are of a higher class; mostly tender and melancholy

landscapes painted in a dream-like half-tone The one entitled "Lethe," a nude figure standing beside the "slow and silent stream," either unwilling to drink or mourning over the result of the draught (it will bear either interpretation), is a very poetic work.

The Society of Miniature Painters.

THE fourth exhibition of this Society, at the Modern Gallery in Bond-street, seems rather like a repetition of the others. All the work is good up to a certain point, but the average miniature portrait, after one has seen a good many, seems rather devoid of artistic interest; correctness and a pretty finish are the main qualities aimed at, and the result is something which is chiefly interesting to the friends of the sitters. Here and there we find an example in which there is an aim at a higher kind of expression, and a variation from the usual enamelled smoothness of finish, as in Mr. Cecil Hobson's "Study of a Head" (68), Mr. Tayler's "Study of a Girl's Head" (80) and Miss Goshawk's "Mrs. Wakefield" (30). Mdlle. Debillemont-Chardon's "Les Vieux" (113) is a fine and carefully worked-out study of four aged figures, but its scale hardly belongs to what is usually understood as miniature painting. There are some miniature studies in landscape, like Mr. Robertson's "Shrimpers on the Sussex Coast" (109), too pretty nudes, "Sea Foam" and "Summer" (102, 107) by Mr. F. Brooks; and Mr. Dudley Hardy's very minute and decorative Eastern subjects (109) are almost gem-like in delicacy and glow, and could be worn as "personal ornaments" in a brooch or necklace—which was perhaps the artist's intention.

Society of Women Artists.

THE "Society of Lady Artists" has now become the "Society of Women Artists." We do not know what (if any) change in the aims of the Society is implied by the assumption of the less aristocratic title, but we fear the artistic results are much the same, and the forty-fourth exhibition (at the Suffolk-street Galleries) does nothing to alter our opinion that such a Society is a mistake and is not worth keeping up. It is absurd to pretend that women have any prejudices to contend against in the artistic world; every woman who can paint a picture that is worth exhibiting takes her place in general exhibitions just as well as one of the other sex; and the only result of a women artists' society is to find wall space for those who do not paint well enough to find their way into other exhibitions. Where you see a striking work in this exhibition, you generally find it bears a name well known in general exhibitions. Mrs. Swynnerton, for instance, sends her curious but powerful work "St. Martin's Summer" (384), already exhibited in London; Mrs. Jopling has one or two works (not among her best); Miss Nora Davison exhibits two good shipping scenes, "The End of the Season" and "The End of the Voyage," (107, 113) and Mrs. Marrable a good architectural picture, "Street in Rothenburg" (152). Among the few good works by names unknown to us elsewhere Miss Annette Elias has a good landscape, "The Ridge of the Down" (375); Miss Kempson's smaller landscape, "Haymaking near Bognor" (260), is also to be noted, and Miss Anna Nordgren's "Swedish Interior" (218), rather after the manner of Israels. The addition of two rooms dedicated to decorative work, repoussé brass and embroideries, is a good idea, and the latter are really women's work in a special sense. Among these exhibits are some very good specimens. But the pictures are a depressing collection for the most part.

Decoration of a Hospital in Paris.

SEVERAL painters in Paris have combined to decorate, gratuitously, the new Hôpital Broca, the new and airy building which now replaces the ancient and melancholy Hôpital de Lourcine. In the large promenade or day-room, towards the gardens, M. Georges Clairin has painted two large panels showing green and sunlit landscapes in which the convalescent patients are represented as taking exercise. The idea of the paintings is "La santé rendue aux malades par la Nature." A neighbouring room is to be decorated by M. Dubufe with a view of Capri and the Mediterranean. In other rooms, MM. Bellery-Desfontaines, Kœnig, Guérin, and Lauret have painted figures symbolising "Hope," "Health," "Convalescence," &c.; and in another M. Roger Jourdain has painted two Parisian scenes—"Promenade dans le Parc" and "Pâturage sur le Lac." The whole are painted in a bright decorative key, and it is needless to say that they have greatly brightened and enlivened the interior of the building.

GREEK ARCHITECTURE.*

WHEN I finished my lectures last year, I said I thought of giving you an account of St. Peter's at Rome, and for that purpose I went to Rome last autumn, visited St. Peter's, and went up into the ball, and through the kindness of the Archbishop of Mellitone, Monsignor Neckere, I was allowed to see the model on which the iron ties are painted, and also the original model of Antonio da Sangallo.

It seemed to me that it would be more useful to give you lectures on Greek architecture than on St. Peter's, for, after all, St. Peter's, although it is the largest cathedral, was completed when the art was in a decadent state, while some of the Greek architecture which still survives was executed at the very culminating point of its excellence.

It seems to me that now there is so much building going forward, and in many instances of important public buildings, municipal and otherwise, that it would be an opportune time to bring before your notice that architecture that has almost every merit and certainly the fewest defects. There are many things to be said on the subject: the climate of Greece is clear and sunshiny, while ours has little sunshine and is frequently obscured by thick mists and fog, and the air has generally the disadvantage of being laden with watery vapour.

In the first place, there was in Greek architecture the comparative simplicity of requirement called for by the simple wants of the people, while now the smallest building for domestic uses is full of complexity, and large buildings are almost as full of various mechanical contrivances as the human body itself.

It is always useful to have an aim, and when we see with what simplicity and perfection the Greek problems were solved, and that Greek buildings have been the admiration of mankind for over 2,000 years, I cannot help thinking that we might make an effort to divest the architecture of our buildings of all unnecessary complexity. The Greeks may be said to have been the inventors of mouldings, and their mouldings are even now our admiration and delight for their exquisite form and logical sequence, but they cannot with any propriety be used in this country, for they were made for Greece and not for England. The utmost care was taken to design them for sunshine, and in the clear sky, with the blinding sunshine, of Attica, the slightest nick or the slightest projection told as a sharp shadow or a brilliant light. There was no device, however subtle, that was not called into requisition to make the series of mouldings assist and enforce one another, and for each one to be beautiful in itself; but in England, or any of the moist and sunless climates of the West, Greek mouldings are ineffective, and therefore they can only be held up to you as a pattern of the end to be aimed at. The Greeks executed their mouldings in a very perfect material—white marble—and we have to get analogous effects in the coarser material of stone or brick, which is to be played on occasionally by a very feeble sun, and in an atmosphere rendered more or less opaque by vapour.

The Mediæval architects were the only ones since the Greek who took the trouble to design their mouldings for the climate, and though their mouldings are very inferior in grace and elegance to those of the Greeks, they, as a rule, got the lights and shadows wanted. In shafts, in a sunny climate, the streak of bright light on the part nearest the sun is perhaps the most striking thing in the shaft. In the grey mists of the West this is hardly perceptible, so that the Gothic architects put a fillet where the light should be, or, instead of making the shaft round, curved it to a beak-shaped form, sometimes with a fillet on the edge. The first of these forms has rather a ludicrous effect when it is seen in sunshine; there are some cases of this on the exterior of the choir of Southwell Minster; but, of course, the architect thought that it was better to have this redundance for so small a proportion of sunlight in the year. When the Mediæval architects wanted a shadow they made a deep sinking, in many instances undercut. What we have to do is to see that our mouldings are as distinct as the mediæval mouldings and, if possible, make them as perfect and as graceful as the Greek. Unfortunately, the study of moulding has been given up—I mean as a practical study to enable us to secure what we want, and not as a study for re-using mouldings which are either not suited to the climate or are more or less barbarous. In one of my former lectures I gave you my notion as to how this double end might be attained, *i.e.*, by setting up a cast of a group of Greek mouldings in the open air and running the same in clay alongside of the model and altering the shape for the various changes in the sky and noting how long each phase lasted, for it is obvious that the moulding which, when cut in stone, cannot be altered, should be made effective for that phase of the sky which lasted the longest.

The Temple, which to a great extent was the form adopted for all important public buildings, was merely an enlarged wooden house mostly executed in white marble, and the form which the more important temples took was that of the house after it had been surrounded by a verandah. This form is particularly effective in a country of strong sunlight, for the columns which form the light part are thrown up by the shadows between, and this was not only beautiful to look at but was very necessary for the protection and comfort of those visiting a Temple or looking at the sculptured frieze on the outside of the nave, but in Western climates a portico or covered colonnade is only useful as a protection against rain, and probably for at least one-third of the year, the columns and the shadow between them are indistinguishable in the mist. In the misty countries of the West, to obtain light is almost as important as it is in hot climates to exclude it, so that windows under a portico or an arcade are through the greater part of the year almost useless.

In England most buildings are wanted to be of many stories, while in Greece there mostly is only one, the ground floor; externally the only parts that are solid besides the roof are the timbers supported by the columns to carry the roof, called the entablature, and at the east and west ends, the triangular gables, called pediments—these parts were originally of wood, but were of course translated with the columns into marble.

I think you will see by this that actual Greek architecture is of very little use in England, and that the features so characteristic of Greek work, the portico or colonnade, would form for the greater part of the year a very poor embellishment and would be only useful as a shelter from rain. The only really effective feature that I recollect, where the effect is gained by shade, is not in England, but in the West of France; it is a deep porch at Coutances Cathedral, but I saw it so many years ago that I cannot exactly call

* Professor Aitchison's first Royal Academy lecture, delivered on Monday last.

to mind the full effect though I know that it was in June or July when I saw it.

I am afraid that you will think from my references to Greek architecture there cannot be much to learn from it that can be applied in this country, but that is really not the case. There is a simplicity, a plainness, a restraint about it that can be applied in any country, if the methods of making the parts effective are studied for the climate as the Greeks studied them for theirs. M. Anatole France has made some very good remarks on a cognate subject. He says we all know what is meant by a simple style, although we know that the labour to produce it is very great, but it has the air of not being laboured but of being spontaneous. It is like this ray of light that falls on my writing table—it is perfectly clear, white, and diaphanous, although we know it is composed of seven colours. Other charms of Greek architecture are produced by the exquisite proportion of the parts to one another and to the whole, and also by those optical devices that the Greeks used to make their buildings look right—the delicate entasis of the columns, the curving of the horizontal lines and the slight differences between the distances of parts supposed to be exactly equal, which, like the slight variations in Nature's works, prevent them palling through monotony, and the intermingling of the rigid lines of the architecture with the most perfect sculpture the world has ever seen. Still, without the sculpture, the architecture has transcendent merits of its own, even in a climate like ours, where it loses nine-tenths of its beauty. One autumn, a good many years ago, I was at Aberdeen, and there was a Grecian Doric façade to a market there, on a tolerably large scale. In that misty climate most of the loveliness of the Doric capital and entablature had disappeared—not so the proportions, and I looked around at all the new buildings in all sorts of styles, and felt that even in that clime the imitation Greek carried off the palm.

Of course, we do not want imitation Greek nor any other imitation; we want if possible to get the master principle on which these brilliant and sublime structures were designed, so that we may apply the principles to our own work. As a poet wants to learn how to present his noble thoughts majestically, he learns the way by studying and paraphrasing the great Greek poets. We want if possible to endow our own country with buildings which may be the admiration of the world, and I think the best method of trying to learn how to do so is to study and to paraphrase the works of those who have succeeded. Studies strenuously pursued and carried over centuries may work wonders, and we should always endeavour as much as in us lies to look upon the art we practise as the torch-race among the Greeks—when each man had to run as far as he could to hand the torch to the new runner. At any rate, we ought to make up our minds to conquer, even if this conquest is only to be achieved by our last successors.

Almost all Greek temples are in ruins and the roofs gone, so that we cannot even view the bare walls of their interiors in the deepening shadows which once made them so impressive. The idols are gone, all the accessories and offerings are gone, too, as well as the painting, and we can hardly picture to ourselves the effect of the beams of the morning sun striking on those idols, which were the most perfect man ever made, while the most celebrated of them were of ivory and gold. All that we can now do, is to study those proportions, those curves and those mouldings that have given an undying celebrity to Greece. It is worthy of your consideration that no columns have been invented, either before or after their time, that have the exquisite proportions and finish of the Greek columns. The Doric, which is by far the finest of the three exquisite orders, is perhaps, the least suitable to our climate; the want of sunshine makes the capital dull and uninteresting, while the brilliant sunlight of Greece produces the full effect of the marvellous light and shadows that the subtle devices of the architect produced on the capital and shaft; but our more profound knowledge of construction and of the strength of materials makes the unnecessary bulk of the column, to carry such slight superincumbent weight, ridiculous.

That the Greeks considered the Doric the most perfect order is shown, I think, by their generally using it in temples to the father of the gods, and mostly confining it to the temples of their male deities.

The Ionic, more slender and more ornate, with a capital whose exquisite beauty has caused the despair of all succeeding architects, is, in spite of its beauty, less successful in the play of sunshine than the Doric.

The Corinthian, the last of the Greek orders, though it took the fancy of the Romans and all succeeding architects, is not so satisfactory as the Doric or the Ionic. In view of its supposed invention by Callimachus, the goldsmith, it has been suggested that the adornment of its capital was originally in metal, and certainly it does not suggest a stone treatment, as all the floral parts are of parasitic growth on the bell or basket; but this, if it be a fault, is not its only one, for, from its great height, it looks rather unstable—still, a paraphrase of it has been almost universally adopted by all succeeding architects; the Arabs alone have kept the form, but have ornamented it with stalactites instead of with leaves.

Supposing we believe Vitruvius' story that Callimachus, who lived somewhere about the time of Alexander the Great, was the inventor, the other two orders were invented many hundreds of years before, and through a succession of improvements were gradually brought to perfection; still we must give the Greeks the credit of inventing and perfecting this capital, which all the nations since that time have vainly endeavoured to equal or surpass. Though I must say that the Romans made the capital more majestic and better suited to a colossal order.

The entablature, suggested by the bressummer and the roof-timbers, was brought to an equal perfection by the Greeks, for no nation since has been able to equal or to surpass it in proportion and effect, nor in the beauty and logic of its mouldings. That the Doric entablature was not only fitted to its end, but was most superbly designed for the climate of Attica is, I think, beyond dispute; its trigylphs not only form the required contrasts to the long horizontal lines, but give the necessary emphasis to the curved and modulated surface of the sculpture in the Metopes, and carry up into the entablature an echo of the fluted column of the portico beneath, while the sloping under-side of the mutules and their guttæ cause shadows that serve to take off the stiffness of the triglyphs.

We know not whether Greek architects were sculptors or not, but the whole free part of the Greek nation was deeply versed in the human form, seeing, as they did every day, youths and men taking their gymnastic exercises and drill naked. I cannot help thinking that the architects, whether sculptors or not, must have noticed how the young clod-hoppers who came as recruits had their shapes rapidly improved and perfected by their training, and thus the architects were very much set on the repression of redundancy, and saw how almost imperceptible changes could produce the highest form of beauty. Most of you have drawn plants and flowers, and have found the difficulty of getting any beautiful curve correctly; you have made the leaf or flower sufficiently like to be known, but the exquisite beauty of certain parts, which probably tempted you to draw it, has evaporated in the process, and you have to draw this flower or leaf over and over again before you even get an approach to its beauty. Now this is a lesson that you should take greatly to heart in all the architecture that you design, to see how you can improve any part you have done so as to make it perfect. Whenever this desire for perfection shows itself among a large proportion of the architects, we shall be sure to see that their work becomes comparatively plain and simple, for where there is great complexity or multiplicity of parts, the life of man is not long enough to produce perfection.

Architecture, looked upon as the creation of organisms that emulate those of Nature, is composed of a suitable arrangement for the purpose required. This arrangement is then to be executed in the materials that we have at hand, or can get consistently with the sum we have to spend. The putting together of these materials is to be in accordance with most advanced knowledge of construction. Really this gives us our building; when the proper cubical contents for breathing are known, all that remains for us to do is to proportion our windows to the light we want and our doors for the number of persons that are to come in or go out together. Lanterns and piers, eaves, gutters, protection from rain to the windows and doors, are practically all that we have to exercise our æsthetic skill on, for in such a climate as ours columns, except internal ones, are rarely called for, and although the orders are very beautiful things, nothing can be more absurd than to stick them over a front where they are not wanted merely as ornaments, besides showing the greatest barrenness of invention.

When we have got so far, I think we are in a fair way of starting an advance in architecture, although I admit that few human being can do admirably any one of the three parts which are necessary for the completion of the structure. The only other ornaments that are required are in the hands of the painter, the sculptor, the statuary, and the glazier.

The Romans were born constructors, but they certainly had not the artistic gifts necessary for the designing of perfect architecture; and admiring, as they did, the perfection of Greek architecture, they thought it was enough to adorn their buildings with the coarse imitations of it applied to them. It is hardly necessary to tell you that the Romans were the first people to use the arch as an architectural feature. Greek architecture was what has been called post and lintel construction, and the Romans on their arched buildings put these imitations of Greek architecture. This gave rise to a particular feature in Roman architecture. We will take the large Thermæ, or hot baths, as an example. In their halls enormous window openings were required, and the entablature, which went from column to column, was not only useless when the columns supported groined vaults, but greatly obscured the light from the windows. The Romans, with that practical sagacity which so distinguished them, cut off the entablature, leaving only a small piece over each colum to carry the vaults, and left out the rest. The Roman idea that good architecture could be produced by foreign additions was very like that of our modern engineers who are conscious that their structures are very ugly, but think that an æsthetic expression may be given them by screwing on a certain quantity of cast-iron pateræ and lions' heads.

It was not until the time of Diocletian, who abdicated in 305 A.D., that we have any example of arches springing directly from the capitals of columns, at least as far as I know, and long after his time this isolated piece of entablature was imitated in a rude way and used over columns. When Byzantine architecture was thoroughly organised at Constantinople these imitations of pieces of entablature were gradually disused.

We must certainly follow the method of teaching architecture used by the Mediævals if we want architecture again to progress, because unfortunately we do not know the method of teaching in Greek times, not even that pursued by the teachers of Constantine's time, not even the Mediæval methods, but by examining Mediæval works we find that an exact knowledge of the strength of the material was possessed by the architects; that they had some rough way of ascertaining the thrusts of arches and vaults; that they were perfectly logical in their application of principles to practice, and that they were not bound by any antiquarian restrictions, for they could invent: they racked their brains to solve the problems, practical or æsthetic, that came before them, and learnt from their failures where they had gone wrong. As I said before, they were the first architects after the Greeks who studied their mouldings so as to make them effective in the dull and misty climates of the West, and they were truthful and genuine in what may be called the necessities of their buildings; they put in nothing that was not wanted because it looked well, but they were not restrained from putting what was necessary because they could not make it take æsthetic form—I may instance the buttresses. The other necessary features of their buildings were managed in the same way, but to these they gave considerable æsthetic effect—I mean their large windows. In many of our large public buildings we require huge windows to light certain parts, but as yet no one has been able to make anything of them, so they are not used except in the case of imitation Gothic buildings, where large imitation Gothic windows are used as of old. We want a large window, but we do not want it filled with geometric tracery—we want something more elegant, more simple, and more refined.

We want to get our sculptors and ornamentalists to give us monumental floral sculpture

from the plants that grow in the neighbourhood of the structure, or at any rate, in our own country, for we are sick of the repetitions of the Greek and Roman Acanthus, and we are by no means satisfied with the barbarous foliage that was used in the Middle Ages, for you must recollect that we are a cultivated people, although not a very artistic one.

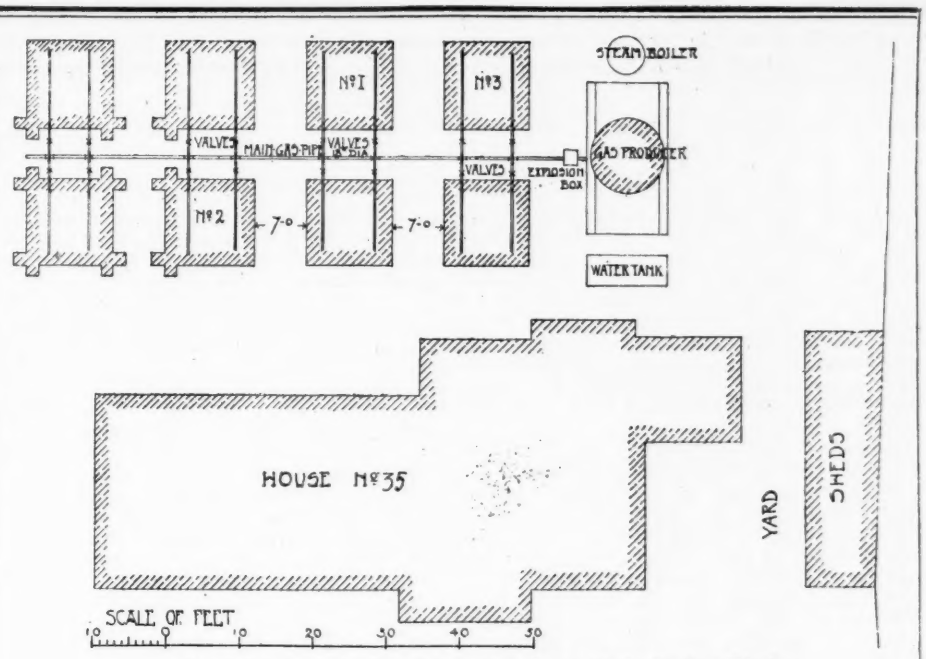
Greek architecture is the original model from which modern architecture has come, mainly through the Roman adaptation, and in this way may be said to be the father of the Romanesque Gothic and Saracenic, while the Italian Renaissance was derived from it by the pure imitation of Roman models; and seeing that the Corinthian capital, as modified by the Romans, was the type of all subsequent floriated capitals, the Royal Academy made one of its requirements for the admission of students that all students should be able to draw the three Greek orders and the four Roman ones from memory. The students for this year were given the Ionic example from the Erectheum, as being a beautiful and strongly marked example, but not one of the aspirants had the least recollection of the order, the wretched Roman paraphrase being alone shown, and the substance of their knowledge was that the order had volutes, but that the lower part between the volutes took the line of a festoon they had forgotten. The ornamented necking was not shown, nor that the upper torus of the base was horizontally fluted. This ignorance is very disgraceful on the part of would-be students of architecture.

We want to learn the principles of Greek architecture to improve ourselves and to secure for our own buildings an equal degree of excellence and sublimity, although our works are so much more complex than those of the Greeks, and we have now materials that I have so often said that the mediævals would have used, if they had possessed them—I mean wrought and cast iron and steel.

Steel is used very largely in America for the frames of buildings, but to safeguard it from fire it is cased with terra-cotta, stone, or marble.

I believe this is the only protection yet discovered, but these protective substances should be used so as to show the real construction, and not be used so as to imitate the appearance of brick, terra-cotta, or marble buildings.

In my future lectures I shall quote largely from Vitruvius, who is the first writer on architecture who has come down to us. He gives us to understand that a great many treatises of the Greek architects had been read and studied by him. Nothing is known of him but what can be extracted from his book. His book is dedicated to Augustus Cæsar, and he speaks of having served with Julius Cæsar, of whom Augustus was the nephew and subsequently the adopted son. We judge Vitruvius' book to have been early because he seems to imply that crude bricks were mostly used, and he gives minute description of an arch, and explains that it has a thrust, which seems rather to speak of its early use. With the exception of Vitruvius being mentioned by Frontinus, Pliny the Elder, and by Servius, the next mention of him that I know is by Eginhard, sometimes called Charlemagne's secretary, who writes to a friend to help him to translate some of the passages of Vitruvius' book. We next know that the Codex was discovered at St. Gall by Poggio Bracciolini in 1414; it was copied by most of the foremost architects of the day, and doubtless by scholars; and the Editio Princeps is supposed to have been printed and published in Rome in 1486, by George Herolt. Vitruvius has been subsequently translated into most of the European languages. Early in this century, C. F. L. Schultz, Counsellor of State at Wetzlar, examined Vitruvius' book and wrote to Goethe in 1829 of his doubts as to its authenticity. Professor Ussing, of the University of Copenhagen, wrote a pamphlet in Danish on Vitruvius, believing Vitruvius to have been an author of the third, fourth, or fifth century. This treatise the Royal Institute of British Architects have had translated into English, and a copy of it can be obtained for a trifling sum at the Institute, in case any of you are sufficiently interested to read it. I trust that some of the scholars of the day will take the trouble of examining the grounds of Professor Ussing's objections, for the question will really have to be settled by Latinists rather than by architects. I hope we shall have some interesting correspondence on the subject in the *Journal* of the Royal Institute of British Architects. I merely mention this to show that its authenticity has been questioned. I may say that Professor Baldwin Brown has some interesting remarks in the last Royal Institute of British Architects' *Journal*.



Block Plan of the Fire-Prevention Committee's Testing-Works.

THE FIRE-PREVENTION COMMITTEE'S TESTING STATION.

THE British Fire-prevention Committee, started by the efforts of Mr. E. O. Sachs, and to which reference has several times been made in our columns, has now completed its fire-testing station, of which we give a block plan, on a site at No. 35 North Bank, close to the St. John's Wood Railway Station. The house has been taken as it stands, for offices and committee-room, and in the garden at the back a series of testing-houses are to be built, as shown on the plan, consisting of square apartments of ordinary brickwork, with fireproof floors, an iron closing door at one side, and a range of small openings about a foot square along one side, at the top, through which the condition of the material in process of testing can be seen and photographed at intervals, and through which also the end of the pyrometer wire can be inserted. Only part of the testing-houses have as yet been erected. In testing floors, the floor is built over the top, as a ceiling to the compartment, and three large gas jets inserted through the floor—water gas and atmospheric air, mixed, supply the fire. The walls, we understand, will only survive about two tests, and have then to be rebuilt from the floor.

The pyrometer, a very delicate instrument, is placed in an upper room in the house, and connected with the furnace by a wire which, at the end inserted into the furnace, consists of a double twist of platinum and iridium, which sends a light electric current, varying with the intensity of the heat, to the pyrometer, where the heat-curve is recorded automatically on a slowly revolving cylinder covered with sensitised paper divided up into grades.

A series of tests have now been commenced, at intervals of a week.

As to the financial aspect of the station, the establishment expenses have been met by a special subscription, which will also cover the expense of conducting tests of general technical interest. Tests with patented materials, makers' systems, &c., &c., are, however, subject to a scale of charges, but these charges are so figured as to only just cover the actual cost. The services of the members conducting or attending tests are given gratuitously.

BRADLEE HOUSE, BOSTON, U.S.A.—We learn that this historical house is about to be demolished for the building of some business premises. Erected in 1771, upon a site now valued at more than 20,000*l.*, it forms the scene of a famous episode, for in its kitchen the ringleaders of the Boston Tea Party assembled to disguise themselves as Mohawk Indians, and thence they sallied forth to the wharf to throw the cargoes of tea into Boston harbour on December 16, 1773.

TIMBER SEASONING BY ELECTRICITY.

A PRIVATE exhibition of the Nodon-Bretonneau process of seasoning timber is being given this week at the works of Messrs. Johnson & Phillips, electrical engineers, Charlton, Kent. The inventors claim that they have solved the difficulty of seasoning and preserving timber economically; and, judging by the samples of wood we have seen treated by this method, including maritime pine and Grisard woods, which have hitherto only been considered fit for firewood, we consider that they have to a certain extent proved their claim. The process has now had nearly a year's trial in France, and that it is an undoubted commercial success is shown by the fact that the shares of "La Société Anonyme pour la Sénilisation rapide des Bois et Matières fibreuses" are now at a premium of nearly 600 per cent.

It is claimed that the effect of the electrical treatment is to totally expel the sap from the wood and replace it by matter which is insoluble and not subject to putrefaction. During no part of the treatment is the wood subjected to a higher temperature than 100 deg. Fahrenheit, and it is stated that the new matter introduced into the wood increases its resistance both to vertical compression in the direction of its fibres and its tenacity under stresses perpendicular to its fibres.

The wood to be treated is placed inside a vat on a lead grating, which is connected to the positive terminal of a dynamo. The solution used at the demonstration contained 10 per cent. of borax, which is a strong antiseptic, 5 per cent. of resin, and 0·75 per cent. of carbonate of soda, this latter ingredient being added merely to make the resin dissolve. It is then poured into the vat until the level of the solution is about 1 in. below the level of the top of the rectangular log of wood. On the top of the log is placed a porous tray, the lower surface of which consists of two sheets of canvas with a sheet of felt between them, and above this is placed a sheet of lead connected to the negative terminal of the dynamo. The solution is kept at an uniform temperature of 100 deg. Fahrenheit by means of a steam pipe which is in the solution underneath the grating. When the current is turned on, the solution is sucked from the bottom and gradually permeates the whole mass of the wood owing to what is called electric osmosis. The sap is driven out and floats to the surface, being replaced by the borax and the resin. The time usually taken for this to happen in a log 10 in. thick is from six to eight hours. After the electrical treatment the wood is then dried. At Johnson & Phillips' works a small drying oven is used through which a current of air is driven by means of an electric fan, and its temperature is maintained at 75 deg. Fahrenheit. In the summer time two to eight weeks in the open air under cover is necessary to dry it.

We were told that about a unit of electrical energy was required for every six cubic feet of timber treated. Hence, so far as expense goes,

there is a large margin for profit, as natural seasoning costs about 15 per cent. of the prime cost of the wood.

Not very much is known at present about electric osmosis, and so far as we know this is the first industrial application of it. If the two electrodes in an electrolytic solution are separated by a porous partition and a current passes, then the volume of the liquid in contact with the positive pole diminishes whilst that in contact with the negative pole increases. The action of the pores of the partition apparently is to prevent the return of the liquid carried along with the current. The exact mechanism of this phenomenon is not known. Quincke and Wiedemann have shown that the worse conductor the liquid is, the more energetic is the osmotic action.

In one of Lord Armstrong's experiments, a piece of wetted thread was placed with its ends in two vessels filled with distilled water. The passage of a current from one vessel to the other along the thread caused the thread to move bodily in the reverse direction to the current and at the same time the water crept along in the same direction as the current. That some such action takes place in this process of seasoning seems highly probable.

We were told that the wood could be made non-inflammable by immersion in a solution of what was vaguely described as a phosphorescent salt, and subjecting it to a further electrical treatment for three hours. Other antiseptic solutions, mineral salts being generally employed, are used to make the wood aseptic, besides the borax solution mentioned above. Wood treated in this way is also useful for musical instrument makers, a plank of Austrian pine we examined being particularly resonant. A careful study of this process has convinced us that it is a valuable one, although it is too early yet to tell whether wood treated in this way will keep its strength as well as wood which has been subjected to natural seasoning.

ARCHITECTURAL SOCIETIES.

GLASGOW ARCHITECTURAL ASSOCIATION.—On the 27th ult. a meeting of this Association was held at the Rooms, Mr. John Fairweather, A.R.I.B.A., in the chair, when Mr. Wm. H. Baxter read a paper entitled "Some Hints on Shoring.' The paper dealt with the difficulties commonly met with in the carrying out of such work, and especially in regard to needle and to raking shores and their foundations. In connexion with the former, whilst the use of the screw-jack was advocated, the danger of leaving them to carry all the weight was pointed out, and blocking up under the needle suggested. The use of cast-iron needles was condemned, especially in conjunction with screw-jacks, owing to the unreliability of the material. Steel-rolled beams were better, owing to their elasticity. The calculation of the weight to be borne by these was touched upon, and it was pointed out that in the era of fireproof construction which lay before us, the added weight of these would require to be allowed for. Common joisted floors which weighed 12 and 14 lbs. per superficial foot were now replaced by patent systems, which were enumerated, weighing up to 60 lb. and 70 lb. per square foot. Improved methods of bracing openings and supporting internal and area walls were demonstrated. Raking shoring was taken up, and some of the English methods were shown by drawings, and the peculiarities of shoring for brickwork exhibited. The mechanics of raking and flying shores, and the calculations necessary before their erection, closed the practical side of the paper. In his conclusion, the lecturer blamed the present lax method of describing such work in specification as the cause of so much inferior and insecure work being in evidence in Glasgow, and gave it as his opinion that if architects were to take a closer personal interest in the work, and control it to a greater extent than at present, the system of doing such work would be improved. The paper caused a good deal of discussion, and the lecturer was awarded a vote of thanks at the close.

BRADFORD SOCIETY OF ARCHITECTS AND SURVEYORS.—At the annual meeting of this Society, held at the Great Northern Victoria Hotel, the President (Mr. B. D. Fairbank) in the chair, the annual report and balance-sheet were submitted and approved, and various alterations were made in the rules of the Society. The officers and committee were unanimously re-elected. After the business meeting the members dined together.

GLASGOW INSTITUTE OF ARCHITECTS.—A general meeting of this Institute was held on the 26th ult. in the Rooms, Pitt-street, the President, Mr. David Barclay, I.A., in the chair. The President referred to the death of Mr. James B. Stewart, architect, Greenock, who had held a high position in his profession and long been a member of the Institute. The Secretary reported a correspondence he had had with the Corporation regarding the Glasgow Buildings Regulations Amendment Bill, and stated that a conference had been arranged between the Corporation's committee and the representatives of the Institute, but that before the conference was held an intimation had been received that the Corporation did not intend to proceed with the Bill in the ensuing session of Parliament. The Institute's committee on the subject was continued in view of the intention expressed by the Corporation to proceed with a Building Act at an early date, and it was suggested that if a conference were held between the Corporation committee and the representatives of the Institute while the proposed clauses were being considered, it would be likely to lead to a better result than if held after the clauses had been passed by the Corporation. A letter was read from Mr. George A. Paterson, the present holder of the Alexander Thomson Memorial Studentship, giving descriptive notes of his tour, and submitting for the inspection of the Institute the drawings and sketches made by him during his stay abroad. The meeting directed that the second instalment of the studentship of 60*l.* should be paid to him. It was resolved that the subject of the next competition for the Alexander Thomson Memorial Travelling Studentship should be "A Gentleman's Country House," and it was remitted to a committee to fix details. It was recommended that the Library Committee should suggest works on architectural subjects suitable for purchase to the value of 20*l.* Satisfaction was expressed that the Institute assessors had been appointed and had arranged suitable conditions for the district halls competition for Springburn and Cowlairs.

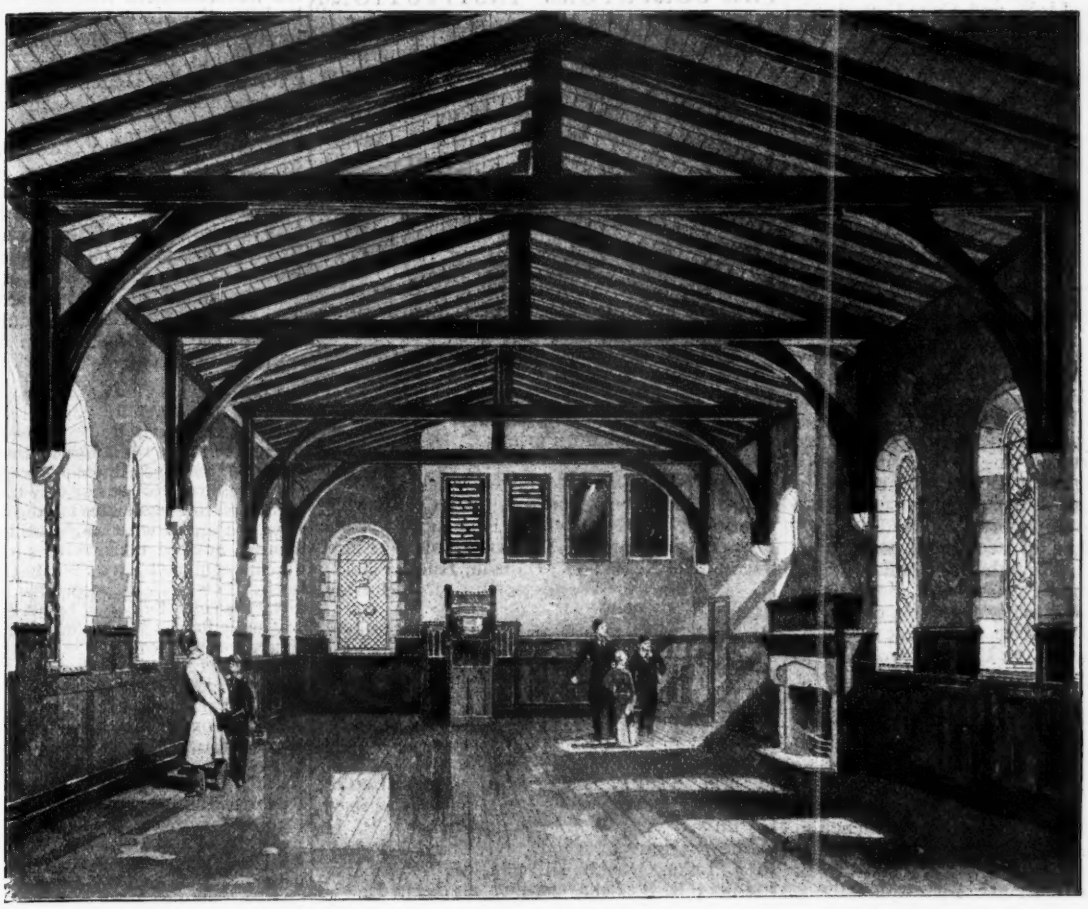
YORK ARCHITECTURAL SOCIETY.—The annual dinner of the York Architectural Society was held at the White Swan Hotel, Pavement, on the 28th ult., the President (Mr. George Benson, A.R.I.B.A.) in the chair. After the loyal toasts had been duly honoured, Dr. Chapman proposed the "Archbishop, Clergy, and Ministers of Denominations," to which the Rev. G. Hewison responded. Mr. A. B. Burleigh submitted the toast of the "Royal Institute of British Architects and their Allied Centres." Referring to the proposed registration of all practising architects, Mr. Burleigh expressed the opinion that so long as the Institute and its examinations were available there was no need for registration. The York Architectural Society had this year been entrusted with the conduct of those examinations at the York centre. Mr. Burleigh also spoke of the excursions which took place during the year under the auspices of the Society, adding that they afforded a welcome relief from actual professional work.—Mr. G. Bertram Bulmer, of Leeds, in reply, spoke of the long existence of the Institute, mentioning that they had had a Royal Charter for sixty years. A society which for such an extended period had been supported by members of the profession from every nook and corner of the country had, by right, attained a position which could not very easily be upset. Mr. Bulmer complimented the York Society on the progress it had made, speaking especially of the examinations held during the past year, at which York men had passed with credit to themselves and their city.—Mr. Councillor Storey submitted the toast of the "York Architectural Society," and advised the Society to exert greater influence in the city when proposals for public improvements, alterations, and rebuilding were under consideration. In the Minster their ancestors had left them a noble example to live up to, and they ought to try and make the city correspondingly beautiful. The President, in acknowledging the toast, made reference to the condition of the Minster, pointing out that the action of the atmosphere, charged as it was with gases emitted from various chimneys, brought about quick decay in the magnesian limestone, of which the Minster was constructed, necessitating constant renovation. In recent repairs a different kind of stone, harder in quality, had been used, which, however, had caused the building to look patchy. It would be well if some preservative colourless solution could be devised which should be applied to the stone by means of a brush. He had no doubt that some permanent preservative of that kind could be found. Proceeding the President said that there was a constant and increasing traffic of heavy wagons along the road which skirted the Minster from the east end to the west front. This constituted a real danger to the stability of the fabric when they considered the enormous weight of the building pressing on the ground, and the fact that already the south transept leaned outwards. The concluding toast was the "Corporation of York, and Prosperity to the City," proposed by Mr. W. Hepper, and responded to by Mr. Councillor Procter.

INSTITUTE OF ARCHITECTS OF IRELAND.—On the 27th ult. a special meeting of the Royal Institute of Architects of Ireland was held at their premises, 20, Lincoln-place, to hear a paper read by Mr. Charles J. M'Carthy, City Architect, on "Some Intentional Irregularities in Italian Mediæval Architecture." Mr. T. Drew, R.H.A., the President, was in the chair. Mr. M'Carthy, in the course of his paper, dealt with the discoveries of Professor W. H. Goodyear, of America, of the well-defined irregularities in Italian Mediæval architecture.* In concluding his remarks, Mr. M'Carthy said he thought they would be forced to admit that to these irregularities were due in a very large measure the variety, the freshness, and, if he might say, the appearance of life which never failed to charm them when they viewed with a seeing eye these monuments of the Middle Ages. And if he was right in this, might not the absence of these irregularities largely account for the tameness, the monotony, and the want of life that to his mind, at least, he regretted to say, were the principal characteristics of all modern work?—The President said these irregularities occurred frequently in Mediæval British and Irish architecture, but he doubted whether any theory of design or intention could be yet based on such investigations as those of Professor Goodyear. A vote of thanks was passed to Mr. M'Carthy, and the proceedings closed.

ENGINEERING SOCIETIES.

INSTITUTION OF JUNIOR ENGINEERS.—At the meeting on the 27th ult., the Chairman, Mr. Basil H. Joy, presiding, a lecture was given by Professor Ewing, Honorary Member of the Institution, on "Measurements of Elasticity." After a general account of what is meant by elasticity and elastic strain, the lecturer proceeded to define the various constants by which the elasticity of a material could be expressed. Of these constants those most usually measured were Young's Modulus of Elasticity, or the Stretch Modulus, and the Modulus of Rigidity, or the Shear Modulus. From these two the other constants could be inferred. In measuring Young's Modulus the whole amount of elastic stretching in such a substance as wrought iron did not much exceed one one-thousandth of the original length. The determination of the Modulus with any accuracy, therefore, required measurements of great refinement, except in the case of wire, where long lengths could be dealt with. For experiments with long wires a simple scale and vernier, reading, say, to hundredths of an inch, would suffice, but for short specimens, such as were used in the testing machine, where the measurements were made on a length of 8 in. or so, extensometers were required capable of reading at least to ten-thousandths and preferably to fifty-thousandths of an inch. After describing extensometers designed by Bauschinger and by Unwin, the lecturer went on to show several forms of an extensometer of his own invention, which had been found at once convenient and accurate in practice. This instrument is entirely self-contained, and is attached to the piece under test by two set-screws at the ends of the length on which the observation of extension is to be made. In its usual form for tension tests, Professor Ewing's extensometer reads to one fifty-thousandth of an inch, but in a special form designed for measuring the elastic compression of short blocks the readings are taken to one two-hundred-and-fifty-thousandth of an inch.

* Professor Goodyear's views have already been referred to in the *Builder*.



The School-room, King's School, Canterbury.

The various forms of the instrument were exhibited by means of lantern slides. Slides were also shown of a number of other pieces of laboratory apparatus which he had designed for measuring the elastic Moduluses by bending and by twisting. The lecturer next described the very imperfectly elastic condition into which iron or steel is thrown by overstraining it—that is, say, by straining beyond the ordinary limit of elasticity. Immediately after being overstrained and when the load is removed, the piece, on being reloaded, does not follow Hooke's Law at all, and cannot be said to have any elastic limit. But as time passes the elasticity comes back, and after an interval of a few days in the case of wrought iron, or of many weeks in the case of steel, it is found that the material has practically perfect elasticity up to a limit which may be much higher than the primitive elastic limit. This recovery of elasticity had formed the subject of investigation by Bauschinger. Curves were exhibited to show the progressive recovery of elasticity in overstrained material through the lapse of time. The experiments described had been made by Mr. Muir in the lecturer's laboratory at Cambridge, using the Ewing extensometer. The curves showed that there was much hysteresis in the relation of strain to load, in overstrained metal, when cyclic processes of loading were gone through before the recovery of elasticity had taken place. Mr. Muir had, on the lecturer's suggestion, tested the effect of heated overstrained metal to moderate temperatures, and had made the remarkable discovery that a bar of overstrained iron or steel is completely restored to a perfectly elastic state by being exposed for a few minutes to the temperature of boiling water or steam. By alternately heating the bar in this way, and loading it just beyond to its new limit of elasticity so as to slightly overstrain it, a piece of mild steel may be made to break with scarcely any total elongation and to show an extraordinarily high range of elasticity and ultimate strength.

KEW BRIDGE.—At a meeting of the Middlesex County Council on the 26th ult., the joint committee of Surrey and Middlesex recommended that the new Kew Bridge should be widened to the extent of 10 ft. beyond the 45 ft. originally designed, if this could be done at an additional cost approximating to 24,000*l*. The report was adopted.

KING'S SCHOOL, CANTERBURY.

ON December 21 the large school-room which has been undergoing repairs and decorations was formally declared open by the Archbishop of Canterbury. The school-room was built in 1855, and is approached by steps from the school quadrangle on one side, and by the "Norman staircase" on the other. The work which has been done to the room is a memorial to the last four head-masters, Dr. Wallace, Bishop Mitchinson, Dr. Blore, and Dr. Field, and has been carried out under the auspices of the present head-master, the Rev. A. J. Galpin. It consists of oak panelling 5 ft. 3 in. high all round the room, with a seat round three sides enclosing the hot-water pipes. There was an existing oak rail on which were carved the names of many old boys, and this has been framed up in the new panelling. The fireplace has been reconstructed and lined with tiles, and an oak chimney-piece has been put over it. The glazing of the windows has been entirely renewed, and coats of arms of various celebrities connected with the school have been introduced. The walls have been painted a light olive green, the stonework cleaned, and the roof timbers have been stained. There is only one piece of old work remaining in the room, viz., an Early English stone corbel in the south wall, which was part of the pilgrim's hall, which used to occupy the place of the present room. This has been carefully preserved. The contractor for the work was Mr. F. T. Gentry, of Canterbury, and the glazing has been executed by Mr. Caldwell, also of Canterbury. The architect was Mr. B. Vaughan Johnson.

COURT OF COMMON COUNCIL.

A MEETING of the Court of Common Council was held on the 26th ult. at Guildhall. In the absence of the Lord Mayor through illness, Alderman Sir Henry Knight presided. The Streets Committee brought up a report which provoked a long discussion. It appeared that about a year ago Messrs. Faudel Phillips & Co., of Newgate-street, applied for permission to construct a light fireproof bridge over Queen's Head-passage, to afford communication between two warehouses, of which they are the freeholders, on either side of the passage. The Court declined to give their sanction, but, notwithstanding that, the firm, acting on legal advice, erected the bridge. On April 21 the Court called upon Messrs. Faudel Phillips & Co. to remove the bridge, but they had not done so. Since then the Streets Committee had consulted counsel, and they now recommended that, having regard to the uncertainty of the law on the subject, as judged from conflicting legal opinion, and to the fact that similar structures had been erected elsewhere without complaint and without annoyance, no further action be at present taken for the removal of the bridge, and that it be allowed to remain during the pleasure of the Corporation.

Mr. A. C. Morton moved as an amendment that it be referred to the Streets Committee to take proceedings to enforce the order for the removal of the bridge, as advised by counsel. He said the Commission of Sewers had always objected to these erections over the public ways, and had refused their consent to any proposals of the kind. By the 154th Section of the Sewers Act, 1848, the Court, if they considered any projections or obstructions against or in front of any building to be an annoyance in consequence of its rendering the passage of the public less commodious, were empowered to give notice for its removal, and, if that failed, to remove it. The same powers were given in the more recent Building Act. The Court itself, when Sir George Faudel Phillips was Lord Mayor, absolutely prohibited even temporary obstructions of the kind on Jubilee Day. He asked the Court to carry the amendment, so that they might go to the Supreme Court and get the law defined.

Mr. Deputy Johnson seconded the amendment. If the committee's report were carried, they would have those bridges all over the city. They ought to have the law well-defined.

Mr. D. J. Ross, the City Engineer, replying to a question, said there were some thirteen or fourteen of these private bridges existing in the City, and he knew of no case where the Corporation had proceeded to a demolition of the structure.

Upon a division there were seventy-two votes for Mr. Morton's amendment, and ninety against it, and it was therefore lost. The report of the Committee was consequently carried.

At the instance of the Streets Committee it was decided to form an accumulated fund to defray any claim that might arise against the Corporation under the Workmen's Compensation Act, 1897. It was determined to oppose in Parliament the National Telephone Com-

pany's Bills, the Telegraph Act Amendment Bill, and the Gas Light and Coke Company's Bill, and to support the Glasgow Corporation Telephone Bill. On the recommendation of the Improvements and Finance Committee 5,000*l.* was given for the leasehold and trade interest at Nos. 1 and 2, Cheapside, with a view to a public improvement there. It was reported that 11,413*l.* had been received from the London County Council towards the net cost of widening Upper Thames-street, between Queen-street and St. Andrew's Wharf.

Having transacted other business, the Court adjourned.

METROPOLITAN ASYLUMS BOARD.

SIR EDWIN GALSWORTHY presided on Saturday at the fortnightly meeting of the Managers of the Metropolitan Asylums District, at the County Hall, Spring Gardens.

The Brook Hospital.—The Works Committee submitted a report replying to the criticisms of the Local Government Board with regard to the Brook Hospital, particularly as to the supervision of works in progress, and the payments to contractors on architects' certificates. The Committeee altogether repudiated the view of the Local Government Board that committees should directly supervise works in progress. The immediate and direct responsibility ought to rest on the Board's professional adviser. Committee supervision could never be efficient in practice. Few members possessed sufficient knowledge of building and engineering to make their supervision of any value, and such supervision would render their presence necessary almost day by day, and that they should be furnished with all the elaborate details of construction given by the architect to the contractor. If the Committee were aware of unauthorised work they would, of course, ask for explanations, but it was in many cases impossible that they should know that a particular item was outside the original specifications unless they were told. The Committee felt that the Managers must disclaim the special responsibilities which their professional advisers were appointed and paid to bear. They proposed, however, that in all future contracts a clause should be inserted requiring that an order from the architect for any deviation from the plans or specifications should be countersigned by the Clerk, as evidence of the approval of the Managers or of their authorised Committee. A book might be specially provided and submitted to the Committee, all orders for deviations issued by the architect being entered in it.

With regard to the objection of the Local Government Board to the drawing of cheques for the amounts included in the architects' certificates without information being furnished as to the works for which the certificates were given, the Committee reminded the Managers that they were bound by contract to make these payments so long as the "retention money" was not encroached upon. Any information given by the architect would be of no more value than the certificate itself unless they went to the expense of employing other professional assistance to check the architect. Besides, in large works certificates were granted on a general knowledge of the progress of the work, and without any exact measurement. The labour and cost involved in such measurements would be very serious and quite unremunerative. As the work neared completion and the part remaining undone became easily computable, it was possible to be more accurate, and certificates were then only given if the amount in hand covered the work to be accomplished and the retention money.

The Committee recommended that an answer to this effect should be sent to the Local Government Board. The consideration of the report was deferred.

THE SLATE TRADE.—With the exception of the last quarter of 1898, demand was very brisk, and the present year shows a great improvement both in the export and home trade. The output also (except at some of the Carnarvon quarries) will probably also show an improvement, and this increase will gradually displace the foreign slates which got a footing in this conntry during the Penrhyn strike. The Workmen's Compensation Act has so far worked without any friction, and there have not been many claims; but many accidents are now reported which would not have been heard of before the passing of this Act. It entails on the quarry owner a cost of 4d. to 6d. per ton of manufactured slate.

THE SURVEYORS' INSTITUTION:

STUDENTS' PRELIMINARY EXAMINATION.

OF the candidates who presented themselves at the preliminary examination of this Institution, held concurrently in London, Manchester, and Dublin on January 18 and 19, the following satisfied the examiners:—L. H. Adams, Burgess Hill; P. Adams, Shortlands; L. H. Allen, Upper Clapton; H. Anderson, Streatham; A. E. Bare, Wandsworth; C. R. Barker, London; H. G. Barker, Bedford; N. B. Batterbury, Berkhampstead; A. H. Bell, Addleston; J. I. Benson, Downton; A. N. Blake, Gosport; H. K. Blyth, Cotham, Bristol; B. A. Boyton, Fulham; R. W. Brealey, Leek; S. Browning, Clifton; W. J. Carter, Brighton; C. H. Clark, London; C. J. Clements, Mildenhall; H. R. E. Coker, Dulwich; F. S. Daniell, Colchester; W. R. Davidge, Teddington; J. G. M. Davies, Rugby; R. H. Demuth, Leek Wootton, Warwick; J. B. Densham, Purley; C. H. Dinwiddy, Greenwich; H. J. Dodd, Goring-on-Thames; J. R. F. Driver, Cambridge; D. H. Eldridge, Crouch Hill; S. F. H. Farmer, Birmingham; C. Fishwick, Hastings; H. V. Fletcher, Tonbridge; R. G. Francis, Sudbury; T. Goodgames, Eaton Socon, St. Neots; H. Hanson, Huddersfield; H. C. Hardy, Wandsworth; R. Hartley, Aspatria, Carlisle; H. G. Heal, Southsea; R. Hewett, Seale, nr. Farnham; F. Hill, Bury; W. H. Hillyer, Catford; R. V. Hitchings, Guildford; R. C. Holbeche, Birmingham; P. L. Hopkin, Pontardawe, nr. Swansea; R. B. Hopkinson, Huddersfield; F. V. How, Lincoln; A. B. Howes, Balham; L. U. Hubble, Maidstone; G. P. Insley, Bournemouth; R. S. Jackson, Sittingbourne; R. C. James, Poole; W. H. R. Jarvis, Worthing; F. W. Jeffery, Hastings; A. W. Johnson, Barnet; R. H. Kaines, Gillingham; L. N. Knox, London; R. J. Lake, Crouch Hill; H. M. Leach, East Putney; R. B. Lees, Congleton; E. L. Lewis, London; S. E. Lowsley, Wolverhampton; T. Martin, Farnham; A. W. Neate,* Newbury; L. R. Notley, Staines; W. H. Overton, Brighton; S. A. Parnwell, Dalston; M. H. D. Parsons, Exeter; J. Patten, jun., Alnwick; D. W. Perkin, Tavistock; C. F. Perkins, Boscombe; P. S. Pitt, Cambridge; A. E. Priest, Old Hill, Staffs.; H. de L. Reaney, Chiswick; C. C. Reed, Beeford, nr Hull; E. Reed, Rottingdean; E. C. Richardson, Stamford, Lincs.; A. H. Rippengal, Croydon; J. A. Robinson, Kirkby Lonsdale; G. A. Rowlandson, Carlisle; H. G. Russell, Thames Ditton; S. R. Sackett, Orsett; E. A. Scollick, Burgess Hill; H. D. Short, Watton; J. H. Slade, Upminster; H. R. G. S. Smallman, Sutton; D. H. Smith, Southend-on-Sea; S. A. Smith, Monkseaton; W. H. Smith, Rochester; T. W. Smyth, Barnstaple; A. P. Stockings, Cheshunt; F. Stone, Launceston; S. D. Taylor, Ashby-de-la Zouch; E. G. Temple, Forest-gate; W. Thompson, Carlisle; F. F. Tomlin, Wood Green; F. Ward, Leytonstone; A. L. Watt, Aspatria, Carlisle; A. D. M. Webber, Bangor; W. J. W. Westlake, Plymouth; P. H. Wharton, Beckenham; J. W. E. White, Tunbridge Wells; E. M. Whitehead, London; J. L. Whytehead, Warminster; C. Wilks, Highbury; H. R. Willmott, Chesterfield; H. M. Wilson, Kettering; J. G. Wood, Upper Warlingham; R. H. Wood, Horsham; F. Wright, Chelmsford; C. A. Young, London.

Irish Candidates.—R. H. T. Gahan, Rathgar, co. Dublin; R. B. Gahan, Dundrum, co. Dublin; J. T. Goff, Killiney, co. Dublin.

* Passed at head of list.

THE LONDON COUNTY COUNCIL.

THE usual weekly meeting of the London County Council was held on Tuesday, at the County Hall, Spring-gardens, Mr. T. McKinnon Wood, Chairman, presiding.

Loans.—On the recommendation of the Finance Committee, it was agreed to lend the Plumstead Vestry 4,200*l.* towards the purchase of a site upon which to erect buildings for the Vestry; the St. Olave's Guardians 80,000*l.* for the erection of a workhouse; and the Managers of the Central London Sick Asylum District 21,810*l.* for the erection and lighting of an asylum.

Flash-light Advertisements.—Dr. Longstaff presented a petition, signed by upwards of 300 architects practising in London, praying the Council to seek powers from Parliament effectively to prevent the existence of illuminated or flashing signs, and to deal generally with the advertisement nuisance, by way either of limiting the size of the letters to be used, or limiting the height above the ground at which they might be exhibited. The petition was referred to the General Purposes Committee. The memorial has been signed among others by the following:—Professor G. Aitchison, R.A., J. Belcher, G. F. Bodley, A.R.A., W. D. Caröe, Basil Champneys, Sir A. W. Blomfield, A.R.A., J. M. Brydon, A. Cates, E. Goldie, T. G. Jackson, R.A., E. W. Mountford, R. Plumbe, C. F. A. Voysey, A. Waterhouse, R.A., J. Oldrid Scott, J. Slater, H. H. Statham, W. White, R. Norman Shaw, Ernest George.

Appointment of Superintending Architect.—The General Purposes Committee reported as follows, the recommendation being agreed to without discussion:—

"On December 6 last we reported to the Council that, having carefully considered the applications received in response to the advertisement issued in pursuance to the resolution of the Council of October 25, for the appointment of Architect to the Council, we were unable to see our way to submit the names of any of the candidates for the appointment. We have considered what course should, in the circumstances, now be taken with a view to filling the appointment, and have come to the conclusion that applications should be again invited by public advertisement, but at a higher salary than the one originally fixed. We believe that if the amount of salary were raised from 1,500*l.* to 2,000*l.*, applications would be received from gentlemen in the architectural profession from among whom the Committee might feel justified in making a selection. We may point out that the salary paid to the Superintending Architect of the late Board between the years 1878 and 1886 was 1,750*l.*, with pension rights, and that the salary (1,500*l.*) of the present architect also carried with it the claim to pension on the retirement of the architect. The new appointment will, however, as in the case of other appointments made since the Council came into office, have attached to it the condition that the person appointed shall on retirement not be entitled and shall not make any claim to any retiring allowance under the Superannuations Act, 1866, and that he will submit to the Council's regulations in respect of the superannuation and provident fund. The actual difference, therefore, between the salary now proposed and that previously attached to the position is, now that there is no pension, comparatively slight. In further support of our proposal we would remind the Council that during the last ten years the work of the department has much increased, both in the administrative and constructional duties devolving upon the architect. We recommend that applications for the appointment of Superintending Architect be again invited by public advertisement, and that the salary to be attached to the appointment be increased from 1,500*l.* to 2,000*l.* a year."

Working Colony for Epileptics.—The Asylums Committee recommended:—"That the Council do approve the provision of a working colony for the male epileptic insane on the Horton Manor estate. That the estimate of 3,000*l.*, to be submitted by the Finance Committee for preliminary expenditure in preparing drawings, specifications, bills of quantities, and taking out levels for the necessary buildings for 300 patients and staff, be approved."

The first recommendation having been adopted by the Council,

Mr. Goodman moved to amend the second recommendation by adding a request for plans of permanent buildings.

Mr. Crooks seconded the amendment.

Mr. Hubbard accepted the amendment on behalf of the Committee, and the recommendation, as amended, was agreed to.

Fire Station, Tooting.—On the recommendation of the Fire Brigade Committee, it was agreed that the estimate of 1,950*l.* submitted by the Finance Committee in respect of the acquisition of a site for a new fire station at Tooting be approved; that the Council do acquire for the sum of 1,900*l.* No. 91, Trinity-road, Tooting, and adjoining ground. That the Fire Brigade Committee be authorised to make the necessary preliminary arrangements for the erection on the above-mentioned site of a new station in substitution of the existing Tooting station.

Waterlow Park.—Mr. Nathan Robinson, Chairman of the Parks Committee, replying to Mr. Idris, stated that, in addition to the 6,000*l.* given by Sir Sydney Waterlow towards the acquisition of Fairseat House, Waterlow Park, he had offered to contribute another 2,000*l.* The matter was before the Committee, and a report would be made to the Council.

The Boadicea Statue.—It was agreed to expend 1,500*l.* in the provision of a granite pedestal on the wall of the Victoria Embankment on which to erect the Boadicea statuary

group presented by Mr. J. I. Thornycroft to the Council.

The Council having transacted other business, adjourned.

THE ARCHITECTURAL ASSOCIATION DISCUSSION SECTION.

THE seventh meeting of the Discussion Section of the Architectural Association was held at 56, Great Marlborough-street, W., on the 27th ult., Mr. H. J. Leaning, Chairman of the Section, presiding.

In opening the proceedings, Mr. Leaning stated that he was sorry to have to say that Mr. C. V. Johnson was obliged, through pressure of engagements, to discontinue as Secretary. The meeting felt, therefore, it must accept the resignation with great regret. Mr. R. H. Weymouth was elected to fill the vacancy.

Mr. C. Spooner then read a paper on "Furniture." He thought we should approach this subject as artists, not as commercial men; as craftsmen too, thus being enabled by knowledge of the material we had to deal with to treat it artistically, avoiding thus either mere copying of ancient work, or horrible decadent eccentricities, the mark of much modern work. Off the beaten track one meets with many difficulties. Firstly, the great trouble in obtaining well-tempered steel tools to begin operations with. Then to obtain properly seasoned wood, and the overwhelming prohibitive cost as compared with the furniture turned out of a wholesale manufacturer's warehouse. The lecturer dwelt some little while on the methods of manufacture of modern furniture, absence of all tenoning (using dowelling instead), veneering cheap woods, and the excessive division of labour, whereby all the *personal* element is eliminated, and the workman becomes himself hardly better than a living machine. He then dwelt upon the methods of cutting timber, seasoning, and the various uses and ways of dealing with the different kinds, as oak, mahogany, deal, walnut, rosewood, ebony, &c., as shown in the making of furniture. How, also, veneer should be used in panel, preferably, for its protection, showing itself to be veneer.

Mr. Spooner then went into the comparative methods of work of a cabinet maker and joiner in dealing with furniture, contrasting the finish of the former with the greater boldness of the latter; argued for their both making their own metal work, as hinges, handles, &c., and closed by quoting from Professor Marshall's "Economics of Industries": "When the necessaries of life are once provided, every one should seek to increase the beauty of things in his possession rather than their number or their magnificence. An improvement in the artistic character of furniture and clothing trains the higher faculties of those who make them, and is a source of growing happiness to those who use them."

Mr. W. B. Hopkins opened the discussion, followed by Mr. E. S. Prior (who, along with Mr. H. B. Quennell and Mr. George Jack, were Special Visitors). He thought that furniture, as designed by architects, grouped under three heads, viz., of fittings, for display, and for every-day use. He agreed with the lecturer, that we should aim at good modern furniture, and not be always falling back on old stuff.

Mr. Quennell thought perhaps we might make an increased use of machinery, and, adapting it to our ideals, work out a new style in keeping with our own times.

Mr. Crawfurth Smith and the Chairman followed, the latter claiming that, with the names of Christopher Dresser, E. W. Godwin, and Burges architects, had led the way in this field of design.

The next meeting, a joint one with the Institution of the Junior Engineers, is to beheld on February 10, at Westminster Palace Hotel, when a paper on "Factory Design," by Mr. T. H. Pearson, is to be read.

COMPETITIONS.

TECHNICAL COLLEGE FOR WIGAN AND DISTRICT.—Mr. Alfred Hewlett recently presided over a meeting of the Building Committee of the proposed Technical College for Wigan and the district. The Chairman announced that seven sets of designs for the Technical College Buildings had been received from selected architects. It was resolved that Mr. Henry Hartley, F.R.I.B.A., of Liverpool, the assessor, who was present at the meeting, should arrange to report upon the designs. This report will be made, as early as convenient, to the Building Committee, who have reserved to themselves the selection of the successful competitor.

THE NATIONAL ASSOCIATION OF MASTER BUILDERS.

THE annual Conference of the National Association of Master Builders was held on Tuesday at Bradford. The morning was devoted to sittings of the Executive Committee, whose proceedings were private. The chief topic discussed was the relationship between the Association and the Plasterers' Union in regard to the threatened lock-out.

The general meeting was held in the Council Chamber at the Town Hall in the afternoon.

On the motion of Mr. J. S. Jones, of Liverpool, the President of the Association, seconded by Mr. Alderman Jessop, Mayor of Huddersfield, a vote of thanks was accorded to the Mayor of Bradford for various acts of courtesy.

The President then moved the adoption of the Report and balance-sheet. He said the Council had had a great deal to do during the past six months. First of all there was the federation scheme. At their last half-yearly meeting the absolute need of federation had been realised, and the scheme had been carried to completion. The relationship of the Association with the operatives had been in a somewhat unsettled state lately, and the Association had received numerous notices of increase of wages and alteration of rules to come in force in the spring. During the past six months there had been no serious strikes, for it was unusual in the building trade to go out on strike in the winter months. But the aggressive manner adopted by some of the trades unions, particularly in regard to freedom of management of employers had become no longer bearable. No doubt the Council would be called upon to join the Federation, and to adopt some policy which would effectually check these aggressive measures. The Workmen's Compensation Act, though it had only been in operation six months, had already given rise to numerous questions of a very serious kind to the employers, causing much litigation, and letting them know the great risk that they ran of pecuniary responsibility as imposed by this Act. The limitation of apprentices was very prevalent in the building trade, and steps ought to be taken for the removal of such restrictions on the inalienable rights of employers.

Mr. Green, of Liverpool, seconded the motion, which was agreed to.

The retiring President moved that Mr. Alderman W. Holdsworth, of Bradford, be elected President of the Association for the ensuing year, which was seconded by Mr. Bowen, of Birmingham, and agreed to.

Mr. Alderman Holdsworth, in responding, said that the main object of the Association was of a defensive character. Although the action of certain employees might have tempted them to take an aggressive attitude, they had every sympathy with the workmen. He had always held, and never could believe otherwise, that men were not all alike, and ought not to be paid alike. Each workman should be paid according to what he earned, and it was hard that he should have to contribute towards the idleness of some, at any rate, of his fellow workmen. He wished the men could see that it was to their interest to get paid what they were worth.

Mr. Church (Bristol) moved, and Mr. Shepherd (London) seconded, the appointment of a Standing Committee to deal with matters delegated to them by the Council. A discussion followed as to the powers of the Standing Committee, some speakers desiring that they should have authority to deal with labour disputes, and others holding that they should report to the Council. Mr. Alderman Jessop said he thought a great deal of power should be left to the Committee. There was the plasterers' question, for instance. That was about to come on, and he was hoping that was to be made a test question as to the worth of that institution, and the Standing Committee would be the means of pointing out to the whole National Association what they had been formed for.

An amendment moved by Mr. Myers, of Leeds, "That all cases of emergency arising between the full meetings of the Council shall be dealt with by the Standing Committee," was carried, and nine gentlemen were elected to serve on the committee.

Mr. W. Cunliffe raised the question of the Builders' Foremen's Society. He said the two most vital questions before them that day were those of the formation of the Foremen's Society and the apprentices rule. Whilst the foremen were members of the Operative Society, it was impossible for them to get proper and trustful information from the works, for the foreman dare not tell what he knew. He moved a resolution that the Executive should do all they could to secure the formation of a Foremen's Union, and insist upon the foremen joining it and be liberated from the Operatives' Union.

The resolution was carried unanimously.

Mr. Shepherd (London) moved a resolution that a donation of ten guineas be devoted to the Free Labour Association, which, he said, was doing very valuable work in insisting on the right of labour to secure its own market. The resolution was adopted.

Colonel Stanley Bird reported an action under the Workmen's Compensation Act, and said there were several matters in regard to which they were going to the House of Lords. It had not been necessary yet to touch anything of the Reserve Fund that they had put away twelve months ago.

The Conference decided to hold the next annual meeting at Plymouth.

The subject of the difficulty with the plasterers was then discussed, but representatives of the Press were excluded. It was officially stated afterwards that the following resolution was adopted unanimously:—"That the Secretary of the Council inform the National Association of Operative Plasterers that in consequence of the hindrance to business and continued friction caused to employers by the conduct of their members, the National Association of Master Builders have determined to call on them for an assurance that they in future abstain from the objectionable practices set out in the printed circular of January 10, and to request a reply by February 14."

APPLICATIONS UNDER THE LONDON BUILDING ACT, 1894.

AT the meeting of the London County Council on Tuesday, the Building Act Committee brought up the following list of applications under the 1894 London Building Act. Those applications to which consent has been given are granted on certain conditions.*

Lines of Frontage.

Bow and Bromley.†—That Mr. J. G. Needham be informed that the Council is not prepared to accede to his request for its consent in respect of a projecting illuminated sign at the "King's Arms" public-house, No. 167, Bow-road, Bow; and that the solicitor do take the necessary proceedings to obtain the removal of the sign.—Agreed.

Width of Way.

Finsbury Central.—Re-erection of No. 7, St. John's-lane, Clerkenwell (Mr. L. Solomon for Mr. E. C. Arnold).—Consent.

Formation of Streets.

Wandsworth.—A variation from the plan sanctioned on December 14, 1897, for the formation of new streets on the Furzedown Park Estate, Mitcham-lane, Streatham, so far as relates to the formation of Fallsbrook-road (Mr. A. Wellings).—Consent.

Wandsworth.—That Messrs. Tompkins & Barker be informed that their application for the Council's sanction to the formation or laying out of a new street on the Woodlea Estate, on the eastern side of Bedford Hill-road, Balham, having been further considerd, the Council sees no reason to depart from its decision of December 13, 1898, refusing to grant the application, but that when the applicants are in possession of the whole of the land necessary for the formation of the street, a further application will be considered.—Agreed.

Line of Frontage and Width of Way.

Marylebone West.†—A one-story addition in front of the coach-house at No. 10, Gloucester-mews West, St. Marylebone (Messrs. C. Brown & Sons for Mr. T. R. Warrington, Q.C.). That the applicants be informed that such consent only operates so far as the provisions of the London Building Acts, 1894 and 1898 are concerned.—Agreed.

Line of Frontage and Construction of Building.

Dulwich.—That Mr. J. W. Brooker be informed that the Council is not prepared to accede to his request for the Council's licence in respect of a wooden structure unlawfully set up and retained at the "Walmer Castle" public-house, Peckham-road, Camberwell.—Agreed.

Width of Way and Construction of Building.

Clapham.—Two open iron sheds in a yard on the east side of Green-lane, Lavender Hill, Battersea (Mr. W. C. Poole for Mr. J. Stanley).—Consent.

Buildings for the Supply of Electricity.

Battersea.—A generating station and works on the east side of Lombard-road, at the corner of Holman-road, Battersea (Mr. C. S. Peach for the Vestry of Battersea).—Refused.

Width of Way and Artisans' Dwellings.

Bermondsey.—Two blocks of buildings on a plot of land on the south side of Webb-street, Bermondsey, abutting upon Swan-mead (Mr. C. L. Morgan for the London, Brighton, and South Coast Railway Co.).—Consent.

Conversion of Building.

Hoxton.—That the Council do, in the exercise of its powers under Section 211 of the London Building Act, 1894, allow the conversion of a proposed warehouse on plots 6 and 7, Boundary-street, High-street, Shoreditch, between Old Nichol-street and Church-street, into a dwelling-house (Messrs. Ford,

* Names of applicants are given in brackets. Buildings are new erections unless otherwise stated.

Son, & Burrows, for Messrs. J. Rotherham & Co., Limited).—Agreed.

Buildings on Low-lying Land.

Greenwich.—That the solicitor do prepare a licence, under Section 122 of the London Building Act, 1894, to Mr. A. Roberts, for the erection of two dwelling-houses on low-lying land in Trafalgar-road, Greenwich.—Agreed.

Woolwich.—That the solicitor do prepare a licence, under Section 122 of the London Building Act, 1894, to Mr. T. J. Young, for the erection of two dwelling-houses on low-lying land, situated on the north side of Bostal-lane, Abbey Wood, Plumstead (for Mr. F. G. Thomas).—Agreed.

Greenwich.—That the solicitor do prepare a licence under Section 122 of the London Building Act, 1894, to Mr. R. W. Lightup, for the erection of two shops and a dwelling-house on land situated at the corner of Whitworth-street and Trafalgar-road, East Greenwich.—Agreed.

The recommendations marked † are contrary to the views of the Local Authorities.

THE BUILDING TRADE DISPUTE.

THERE is very little to report this week in regard to the plasterers' dispute. At the Bradford meeting of the National Association of Master Builders on Tuesday, the Conference discussed the matter in private, but it was subsequently officially stated that it had been resolved to inform the National Association of Operative Plasterers that in consequence of the hindrance to business and continued friction caused to employers by the conduct of their members, the National Association of Master Builders had determined to call on them for an assurance that they would in future abstain from the objectionable practices set out in the printed circular of January 10, and to request a reply by February 14. The objectionable practices referred to are as follows :—

1 (*a*) The persistent attempt to coerce foremen of plasterers or superintendents of plasterers' work into the membership of the National Association of Operative Plasterers; also (*b*) the threat to withdraw all members from the building firms employing such foremen or superintendents.

2. The limitation of apprentices.

3. (*a*) The practice of boycotting certain building firms and employers of plasterers in spite of the fact that such firms adhere to the rules agreed between the Master Builders' Associations and the N.A.O.P. (*b*) The practice of printing and circulating amongst the members of the N.A.O.P. a list of such firms for whom they are forbidden under penalty to work.

4. The refusal to work on buildings where some of the workmen employed may not belong to a trade union.

5. (*a*) The refusal to accept the decision of the employer as to which workmen shall do certain work in cases where plasterers dispute with other trades as to their right to do such work. (*b*) The practice of withdrawing all their members when such work may not be placed in the plasterers' hands.

6. The objection to submit all trade disputes to discussion at a conference between employers and employed with a view to arrive at an amicable settlement prior to any strike or withdrawal of workmen.

GLASGOW SCHOOL OF ART.

THE fifth lecture of the series on the "Architecture of the Renaissance in France" was given by Mr. W. J. Anderson on January 23, when the Louis Quatorze and Quinze periods were reviewed. To illustrate the passage from the interiors of the Henri Quatre period to those of Louis Quinze, the chamber of Marie de Medicis at the Luxembourg and the Galerie d'Apollon at the Louvre were compared, and a series of interiors presented, including the Galerie des Glaces at Versailles and the Salle du Conseil at Fontainebleau. By arranging them in processional order, so to speak, it becomes possible to grasp their character and meaning better even than by a visit to Versailles or Fontainebleau, for this leaves a sense of confusion till the historic relation is fully apprehended. Ostentation was described as the prevailing note of the Louis Quatorze style, luxury that of the Louis Quinze. During the Louis Quatorze style a tendency towards the rounding of panels, the softening of angles, &c., is traceable, and by the time of Louis Quinze every detail and accessory had been invested with a roundness of contour and suppleness of form. Some of the happiest results were attained in painted decoration, like that of the Salle du Conseil at Fontainebleau, where the delicate paintings are imposed on the Louis Quatorze wainscotting. The influence of Watteau is a prevailing one in the decorative painting, but the ideal which the artists had in view is born of the Far East, whose civilization had now began to affect Western Europe. From the extremes of this free and graceful work there resulted in the time of Louis Seize the inevitable reaction to forms of a simpler nature, conforming more directly to constructive principle. But regarded as a style for interior decoration, expressive of luxury and ease, of a high type of civilisation and an aspiration after something higher, the Louis Quinze, in the long procession of French interiors, must bear the palm. The contending tendencies towards chillingly correct classicism on the one hand, and freakish construction of ornament on the other, are noticeable here as in Italy, though confined respectively to exterior and interior work, while the rococo decoration is of a more refined type in France. More distinctively than in Italy does the Renaissance revive the mytholgical motives, for while in spirit the Italian variety is Christian and Roman Catholic the French is Pagan and Imperial. The walls of Versailles give back the echo of the proverb of its maker, "I am the State;" they testify as nothing else can do to his pomposity, self-sufficiency, extravagance, and thirst for military glory. The cost of the building of the palace may take its place as a determining factor in the progress to the Revolution, holding to that event the relation which St. Peter's holds to the Teutonic Reformation. But a great work of architecture is never anything but a great gain to a nation, and in Versailles Louis Quatorze provided for the proletariat of Paris, without in the least intending it, a magnificent historical museum, and a park and playground unrivalled in the world.

THE LONDON SCHOOL BOARD AND THE ASSISTANT ARCHITECT FOR REPAIRS.

AT the meeting of the London School Board on the 26th ult., the Works Committee reported upon a question of drainage in connexion with the Board's Brentwood Industrial School. The report stated that the whole of the drainage at the school was reconstructed under the supervision of Mr. H. Bradfield, then superior officer for repairs, at a total cost of 503*l.* 17s. 8d. During last summer an outbreak of illness occurred at the school, and the Medical Officer of the Board, who was requested to inquire into it, submitted reports, in the course of which he stated :—"It would be well to take the opportunity to have the drainage system thoroughly examined and tested by a competent person; and if it could be arranged for the soil pipe, which I have already mentioned, to be removed to an external situation, so much the better." "I would also advise the Committee to take steps to obtain a thorough examination of the drainage system of the school, as in many respects this requires alteration." On these recommendations Mr. Bradfield, Assistant Architect for Repairs, was instructed by the Sub-Committee on Repairs, Sanitary Works, &c., to make inquiry and to report, and on November 15 last he submitted the following report :—"I have carefully examined and tested the drainage and sanitary arrangements both with testing tubes, smoke, and water, but fail to find any defects or leakages. The whole of the drainage was reconstructed under my supervision some five years ago; the pipes are all laid in concrete and jointed in cement. Inspection chambers are provided at all important points, there is a proper and efficient system of inlet and extract ventilation, which I find to be in perfect working order. All wastes are disconnected and discharge over outside gulleys, and the whole system is disconnected from the main drainage by a proper intercepting chamber and interceptor. I cannot see that any alterations are required. The Medical Officer and Sanitary Surveyor are arranging, I believe, to visit the school this week and make another inspection and test." The Medical Officer of the Board, however, was not satisfied, and requested that a further investigation should be made. Thereupon Mr. Peacock, the Board's Sanitary Surveyor, was instructed by the Industrial Schools Committee to examine the drainage system, and on November 22 he reported serious defects in the drainage. This report was so inconsistent with that of Mr. Bradfield that the Works Committee determined to consult an independent sanitary expert. Mr. G. A. Pryce Cuxson, F.S.I., A.R.I.B.A., was called in, and the two reports of Mr, Bradfield and Mr. Peacock were submitted to him without names, and he was requested to make an independent inquiry. This was done, and the report of Mr. Cuxson confirmed that of Mr. Peacock. The Committee then asked Mr. Bradfield for his observations on this report. He adhered to his former statement, and submitted various observations on Mr. Cuxson's report. These observations were forwarded to Mr. Cuxson, who in no way modified his report, but expressed surprise at some of the propositions put forward by Mr. Bradfield. As the illness at the Brentwood School had in some cases resulted in death, the Committee felt that the matter was a very serious one, and that, having regard to the extremely responsible and independent powers of Mr. Bradfield as their adviser, they could no longer repose the necessary confidence in him, and they accordingly called upon him to send in his resignation. Mr. Bradfield, however, had declined to take this step, and it became necessary therefore to recommend the Board to confirm the action of the Committee.

The Medical Officer of the Board reported that, after a careful consideration of the whole of the facts of the case, he was of opinion that the outbreak of illness at the school was to be ascribed to the defective drainage arrangements, aggravated by the overcrowded condition of the school, whilst the school provision for the water supply was not altogether free from suspicion. He suggested that the whole system of drainage should be remodelled under proper skilled supervision, and, pending such a revision, that the boys should not be allowed to return to the school.

Professor Corfield also reported upon the matter. He stated that he had examined the sanitary arrangements and had read the reports of the Sanitary Surveyor and Mr. Cuxson and the remarks of the Assistant Architect for Repairs on those reports. At the end of his report Professor Corfield says :—"In conclusion I consider that the drainage and other sanitary arrangements have been well planned and carried out, although certain minor improvements might no doubt be made, as is always the case in buildings where the sanitary arrangements have been carried out so long as seven years ago, and especially where some of the old fittings have been left in order to save expense; but the alterations required are in my opinion few and inexpensive, and there is no reason why this school should not be a perfectly healthy one. I see no reason at all for any reorganisation of the drainage arrangements, which I consider quite unnecessary."

Lord Morpeth (Chairman of the Works Committee) moved—"That the Board confirm the action taken by the Committee in calling upon Mr. H. Bradfield, Assistant Architect for Repairs, to submit his resignation."

The Rev. Father Brown moved as an amendment that the matter be referred back to the Committee for further consideration and report.

Mr. Barnes seconded the amendment.

The discussion was adjourned on the motion of Mr. Costelloe, who said he had never known a case in which there was a clearer conflict of testimony.

Other business was transacted, and the Board adjourned.

Books.

Building Construction. Advanced and Honours Courses. By CHARLES F. MITCHELL. Second Edition. London: B. T. Batsford. 1898.

Building Construction and Drawing. Firs Stage or Elementary Course. By CHARLES F. MITCHELL. Fourth Edition. London: B. T. Batsford. 1898.

THE approval we expressed of each of these books on their first appearance, three and ten years, respectively, ago, has been amply justified. Not only have both had very large sales, as shown by the number of reprints, but each new edition has been conscientiously corrected and added to, and made a distinct improvement on its predecessor. The two together form unquestionably the best guide to all the mechanical part of architecture which any student can obtain at the present moment. (Therefore it seems rather a pity that both books should not be "got up" quite uniformly, and made consecutive volumes of the same work). In fact so far as it is possible for any one to compile a satisfactory treatise on "building construction," regarding it as a separate, isolated subject—divorced, that is to say, from all considerations of æsthetics or tradition, Mr. Mitchell has performed the task as well as we are likely to see it done. All the characteristics which we formerly praised in these works still distinguish them, and both the letterpress and the number of illustrations in each have been considerably added to; the larger volume has an increase of about forty pages and twenty-five illustrations, and the smaller of sixty pages and twelve illustrations, and it may be added that many of the new drawings show a further improvement in the direction of clearness and usefulness. We are sorry, though, to notice that our suggestion, calling in question the advisability of sacrificing so much space to the printing of South Kensington examination papers, has not borne fruit; the questions loom as large as ever, and we still think that it would be better not to burden so excellent a *general* text-book with the details of special examinations which any student could easily obtain separately.

These two books offer so much really valuable information at such a very moderate price that it is rather difficult to complain of omissions; still, any one expecting a complete account of all building processes may be surprised to find in the list of titles of chapters no mention of plastering, painting, or glazing. As a matter of fact, the two former of these crafts are dealt with, somewhat briefly, in the chapter entitled "Materials," in the Advanced Course; but the glazier, for some reason or other, "finds his occupation gone" entirely. It is worth while, though, on the other hand, to call atten-

tion to the author's praiseworthy endeavour to raise the present far too low standard of quality in brickwork. The British bricklayer, however radical he may be in other respects, is tenderly conservative in sticking to the worst form of bond, whether for strength or for appearance, used by any civilised nation. Mr. Mitchell by no means overstates the case when he commends "Dutch bond" (the method practised almost universally in Holland, Belgium, and Germany) as being "certainly superior to much of the very inferior work one is accustomed to see as examples of the modern bricklayer's skill in bonding." No better service could be done by the new technical schools than by their instructing the rising generation of bricklayers to improve upon the system which now satisfies their fathers, and we may fairly hope that Mr. Mitchell, in the large and important school which he directs at the Polytechnic, will initiate this advance. In general, we may say that the arrangement of matter in these books is good; both volumes are sufficiently indexed; and they can be thoroughly recommended for all the purposes which they are designed to serve.

The Romano-British City of Silchester. By FREDERICK DAVIS, F.S.A. [Reprinted from "Bygone Hampshire."] London: W. Andrews & Co. 1898.

THIS pamphlet gives a clear and concise summary of the excellent work carried out since 1890 by the Silchester Excavation Fund, which we have from time to time described at greater length in these columns. The topography of the city, the disposition of the buildings, so far as they have been revealed by the excavations, their arrangements and materials, are all dealt with in turn, and Mr. Davis has also something to say about the water supply and the absence of any system of drainage. In writing about the numerous antiquities discovered we are glad to notice that Mr. Davis rightly gives the first place to the architectural remains, the capitals and bases of columns, the fragments of moulded stonework and marble, and the few fragments of inscriptions. These remains and the ground-plans of the buildings practically form the only material from which the history of the Roman town can be put together, for the objects in pottery, bronze, glass, and iron, as well as the coins, are not local to the spot, and so add but little to the story.

Mr. Davis has a good deal to say about the manner in which the remains of the town, chiefly floors and foundations of buildings, have become buried to depths ranging from 6 in. to 30 in. below the present level of the ground. Being evidently a disciple of Darwin, he attributes it entirely to the action of worms. "Earth worms are the *vera causa*," he says, and ten pages out of sixty-two are devoted to a discussion of the theory. Mr. Davis's deductions are ingenious, and if Darwin's conclusions from his study of earth worms be accepted, there is much in their favour; but our readers must see for themselves what is to be said on the subject.

Journal of the Sanitary Institute. Vol. XIX. Part IV. London: The Sanitary Institute, January, 1899.

THIS volume consists chiefly of papers read at the Birmingham Sanitary Congress in September last, and of reports of the discussions thereon. We naturally turn first to the papers in the section on "Engineering and Architecture," but are surprised to find that, of the eight contributions to the section, five are written by doctors, two by civil engineers, and one by a sanitary engineer; not a single paper has been contributed by an architect (except the President's address). Whether this is the fault of the Sanitary Institute or of architects, we cannot say, but it is certainly a curious anomaly that, under the heading of "Architecture," architects are conspicuous by their absence. There is a good paper by Dr. Barwise on the *Plenum* system of ventilation as applied to public elementary schools; in it he criticises adversely the building Regulations of the Education Department, and shows that these regulations entirely ignore the *Plenum* system. He instances the Bolsover Colliery Company's schools, and two Board schools at Leicester, as excellent examples of the system; and, in the discussion which followed, the President of the Section, Mr. W. Henman, referred to his own experience at the General Hospital, Birmingham, and at the Handsworth Technical Schools. The general opinion was undoubtedly in favour of the system, although Dr. Scurfield considered it doubtful whether it was the right system to adopt for hospitals with such a large air-space per bed as at Birmingham—namely, 1,800 cubic feet; for elementary schools, however, where the air-space is only from 100 to 140 cubic feet per head, he was of opinion that "they must have mechanical ventilation or foul air." A paper by Mrs. White Wallis, on "Hygiene of School Life in Practice," before another Section, is well worth perusal. She thinks that "defects of eyesight and of lung capacity are forced upon the children during the period of their school education, preparing them to be physically incapable adults;" but she is careful to say that the fault does not now rest with architects, her opinion being that "architects and engineers, who are practical people, construct almost perfect school buildings from a sanitary point of view." But why "engineers"?

Space forbids us to consider the remaining papers, although many of them are well worth attention. They include a record of tests of the quantity of water required for flushing water-closets, the analysis of water, the purification of sewage, the causes of endemic typhoid fever, &c.

Altogether, this is an excellent number of the *Journal* and shows that the Sanitary Institute is doing very good work indeed.

The Purification of Sewage: being a Brief Account of the Scientific Principles of Sewage Purification and their Application. By SIDNEY BARWISE, M.D., M.R.C.S., D.P.H., Medical Officer of Health to the Derbyshire County Council. London: Crosby Lockwood & Son. 1899.

WE know of no book of the same size, or anywhere near it, which gives so complete and accurate an account of the principles of sewage purification as is to be found in this one. Of course the portions dealing with the application of those principles are not sufficiently detailed for the purposes of the engineer, but they are quite sufficient to give any one a good general idea of the chief methods and apparatus now in common use. Amid all the noisy claims of rival patentees, Dr. Barwise preserves his calmness and sanity. Analyses do not mislead him; the determination of chlorine in samples of sewage taken before and after purification is, he says, "always an important one, as, if the percentage of purification effected by any process is to be gauged, the chlorine in the effluent must be practically the same as that in the sewage; it is a pity that this elementary fact has not been more generally appreciated by the advocates of many patented processes, as the analyses they publish prove too much." In the small hours of the morning, sewage is very weak, what arrives at the purification works being largely diluted by subsoil water, &c.; if this takes five or six hours to pass through the tanks, and samples are taken at, say, 9 a.m., of the tank-effluent and of the sewage arriving at that hour, it follows that the effluent will show a far higher degree of purity than the sample of raw sewage; but the trick, for it is not worthy of a better name, will be discovered by a comparison of the chlorine in the two analyses.

This is only one out of many valuable hints given by Dr. Barwise. As Medical Officer of Health for Derbyshire he has had, to quote his own words, "constant opportunities for the inspection of sewage works in actual operation, and for analysing the effluents from such works," and his book of only 150 pages affords proof that he has taken full advantage, not only of these opportunities, but of many others, and that he possesses the great gifts of thoroughness, condensation, and lucidity. Like good wine, this book needs no bush.

The Law of Light and Air. By ALFRED A. HUDSON and ARNOLD INMAN, Barristers. London: *Estates Gazette* Office, and Snell & Maxwell. 1898.

BEFORE saying anything in regard to this work we would point out that there is no date of publication on the title-page, an omission which is often of great inconvenience to librarians. The book itself is one which will certainly be found useful. The plan of the book is the statement of the law in sections, which are followed by illustrations. This plan at first sight seems good, but it is doubtful whether it is really of much value, unless the legal statements are put very shortly and clearly. This can scarcely be said of this book. For instance, Chaper XII is entitled "Remedies by Action." Section 2 of it is headed, "Damages in Lieu of an Injunction." The first part of this section contains a portion of Lord Cairns' Act, and a slight discussion of it followed by an illustration showing a case in which damages were not awarded. So that on the whole we are inclined to think that a work more truly systematic in form would have been published had the usual plan of law books been followed. This, however, is a criticism of form only. As regards the substance of the book it may be relied on as a safe guide to the subject of which it treats. As the Courts have decided recent cases on light and air they have been noticed in our columns. There is, therefore, nothing new to comment on in this book. It is sufficient to say that it is a safe guide to a particular branch of the law.

The Law of Negligence. By T. W. SAUNDERS, Barrister. Second Edition. By E. B. WRIGHT, Barrister. London. 1898.

THIS is a small work which deals with the whole law of negligence, and incorporates within its pages the Employers' Liability Act and the Workmen's Compensation Act. It is an old work modernised, and, we fear, without sufficient consideration. For the subject is a huge one, and to include into it the two statutes we have named prevents any possibility of really doing justice to either branch. We are bound to say also that when space is so valuable we are surprised to see it taken up by statements which are of no use whatever. Thus we find under the head of "Specialist" the following, "It would seem a principle that a specialist would be expected to have the skill of a specialist, and if he only came up to the ordinary degree of skill of a family practitioner he would be liable for negligence; but the difficulty would be to define where his skill fell short of the required degree," p. 124. Specialists are not confined to the medical profession, and this paragraph, while it may make all specialists tremble, does not tell them when they are safe and when they are not. Again, there are so many books on the Employers' Liability Act that a buyer would hardly ask for one which is made larger by vague general statements on the law of negligence.

Accidents to Workmen. Being a Treatise on the Employers' Liability Act, 1880, Lord Campbell's Act, and the Workmen's Compensation Act, 1897. By R. M. MINTON-SENHOUSE, Barrister, and G. F. EMERY, LL.M., Barrister. London: Effingham Wilson. 1898.

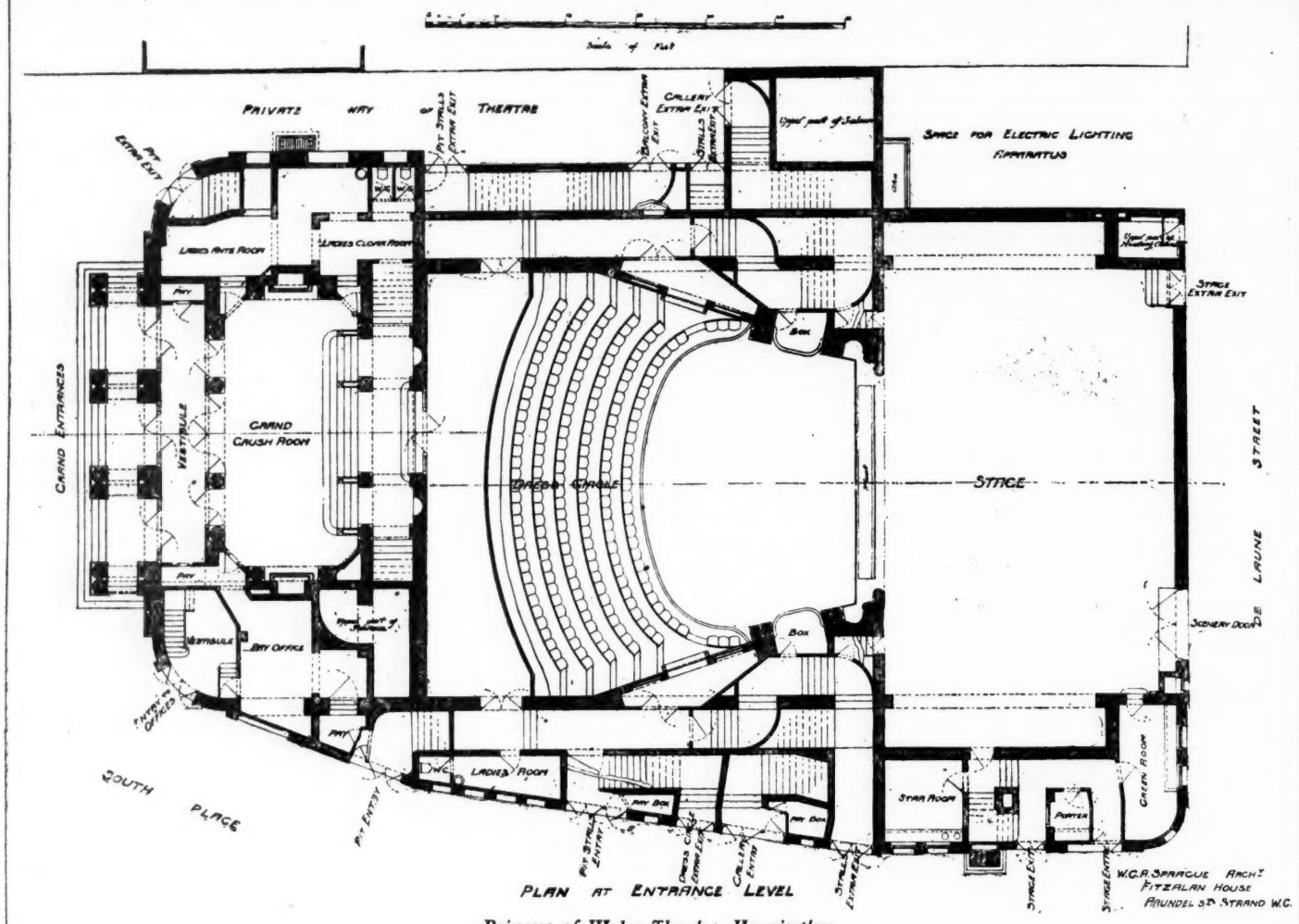
"THIS book," say the authors in the preface, "may be regarded as a new edition of the Employers' Liability Act, 1880," by the first of the writers of the work. We have spoken favourably of that book, and of this we can also speak well. The plan of the book makes the statutes the basis of it. They are incorporated in it, and comments are made section by section. Then there are various chapters dealing with important points in the Acts. We can strongly recommend the work to both laymen and lawyers.

BOOKS RECEIVED.

BEVERLEY MINSTER. By Charles Hiatt. (Geo. Bell & Sons.)

THE CATHEDRAL CHURCH OF YORK.—By A. Clutton-Brock. (Geo. Bell & Sons)

COMPENSATION FOR COMPULSORY PURCHASE.—On the 24th ult. a case for compensation came before Mr. Under-Sheriff Burchell and a jury at the Sheriff's Court, Red Lion-square, to assess the amount to be paid to Spences' Trustees by the Surrey Commercial Dock Company for an improved ground-rent of 28*l.* 7s., with fifty-three years to run, secured upon five shops in Lower-road, Deptford, compulsorily taken by the company and absorbed in their dock premises. A claim was made on behalf of the trustees by Mr. William C. Banks, architect, of Gracechurch-street and Lewisham, for 822*l.* 10s., and Mr. Stenning and Mr. Green gave evidence in support; and Mr. Nye, Mr. Field, and Mr. Dowsett (who put the amount at about 600*l*) for the company. The jury, after a short consultation in private, awarded 817*l.* 12s. Mr. Gregson Ellis was counsel for the trustees.



Princess of Wales Theatre, Kennington.

Illustrations.

SCHEME FOR LAYING OUT NEW PLAYING FIELDS, ETON.

THE drawing is intended to represent the land called "Agar's plough," laid out as playing fields according to a scheme made for the Eton governing body. The point of view from which the drawing is made would be a little west of Upton village, looking up the main avenue that terminates eastward in Upton Church tower, and in Eton College Chapel to the west. "Agar's plough" is shown as divided into four irregular quadrangles by avenues and counter avenues, with architectural ornaments at their intersections. Since it has been urged by some, who are possibly not aware of the extent of the ground to be treated, that these compartments would be too small for cricket, it may be well to point out that the least of them is more than twice, and the largest quite five times the size of the present "Upper Club" ground. The Eton and Slough road is enclosed in the avenue on the right of the drawing, and Datchet-lane lies among the trees of the next cross avenue beyond the round pond. More land beyond the Slough-road was treated in the plans and report, but in the view illustrated this is not included. F. INIGO THOMAS.

*** We may add that the drawing was exhibited at the last Royal Academy Exhibition. As a first attempt, as far as we know, to lay out school playing-fields on an artistic scheme, it is of considerable interest.—ED.

DESIGN FOR A ROYAL MAUSOLEUM.

THIS interesting design, of which we give the complete drawings, is the one for which the Council of the Institute of Architects awarded its author, Mr. Jas. B. Fulton, the Tite Prize, founded for the encouragement of the study of Italian architecture.

We have already made some comments on the design, in the course of an article on the Students' designs generally, and need only here leave Mr. Fulton's drawings to speak for themselves.

PRINCESS OF WALES THEATRE, KENNINGTON.

WE give the perspective view and plan of this theatre, recently built from the designs of Mr. W. G. R. Sprague.

The whole of the main frontages are executed in stone. The principal parts of the house are entered from the Kennington-road through a colonnade into a vestibule or lobby and thence to the crush room, the walls of which are lined with a specially selected Pavonazzo marble. The dress circle is approached by a marble staircase, branching off right and left from a bold flight of marble steps from the grand crush room. Directly above the crush room is a ladies' foyer and saloon, approached from the grand staircase. The style of decoration adopted throughout the interior is French Renaissance, with paintings introduced in the ceilings and panellings.

The auditorium is about 70 ft. by about 60 ft., and constructed on the two-tier principle, viz., stalls, pit-stalls, and pit on the ground level, the dress-circles forming the first tier or balcony, and the gallery and amphitheatre the second floor. The theatre throughout is heated and ventilated on the "Plenum" system by Messrs. Emly & Sons, of Newcastle, fresh warm air being introduced by means of conduits and flues to the various parts, and the foul air extracted by exhausts. A complete system of fire hydrants is arranged for all parts, and the stage is fitted with a special double asbestos and steel fire-proof curtain, so arranged as to be under the control of one man. This work has been carried out by Messrs. Shand, Mason, & Co. The stage is about 80 ft. wide, by about 50 ft. deep, provided with the latest improvements and machinery, and has been fitted up by Mr. Cawdrey, stage carpenter and machinist.

The electric light is used throughout, obtained from independent plant, set up in the electric engine-house adjoining, and also from the Electric Company's main, power being provided sufficient to supply upwards of 3,000 lights. The installation has been carried out by Messrs. Barclay & Sons, under the supervision of Messrs. Lucas & Pyke, consulting engineers. As a reserve in the event of either of the sources of electric light supply failing, a gas installation is also provided, which has been put in by Messrs. Stott.

The dressing-rooms are numerous and provided with all the best sanitary appliances, and the dressing-room block is entirely separated from the stage by brick walls and iron doors.

The furnishing has been carried out by Messrs. Hampton, of Pall Mall, and Mr. Southorn, of Liverpool. The builder is Mr. Walter Wallis, and the decorations of the entrances and auditorium have been executed by Messrs. De Jong.

SLOANE COURT, S.W.

THIS large group of West End residences and flats has been in the course of building during the last two years.

The two lines of structures shown in the perspective are now complete, and a third parallel line has been commenced. The site overlooks the charming old gardens of Chelsea College, and is about one minute's walk from Sloane-square.

The line on the left consists of family mansions. The buildings on the right are flats, of two reception-rooms, four bedrooms, and offices, &c., fitted up with every modern convenience.

All the details and the finishings have been carefully considered by the architects of the entire series, Messrs. Rolfe & Matthews, of London.

The architects of the above building have declined to furnish any plan of it, a decision which they did not communicate to us until it was too late to withdraw the illustration, as we should otherwise have done. We may take the opportunity of pointing out that we do not profess, or desire, to publish pictures of buildings without plans; such illustrations failing short of the proper object of an architectural journal.

DRINKING-FOUNTAIN, WALTON-ON-THAMES.—A drinking-fountain in granite has just been erected at Walton-on-Thames by Messrs. J. Whitehead & Sons for the Metropolitan Drinking-fountain and Cattle-trough Association.

Correspondence.

To the Editor of THE BUILDER.

THE ARTS AND CRAFTS, FROM ANOTHER POINT OF VIEW.

SIR,—As an architect, living in the country, who has employed craftsmen of all sorts, and of varying skill and position, and who, moreover, has from the very first (now over thirty years ago), not only found it politic, but also, it is hoped from an innate regard for his kind, has always tried by kindly and brotherly co-operation to treat them as fellow-workers, I have no hesitation in affirming that, from the *craftsman's* point of view, he not only feels lost without a head officer—call him the "master-mind," or what you will—but that his best efforts always go out to such a one, provided he is a reasonable being. As with the architect, so with the craftsman; I have always desired to be perfectly fair, frank, and straightforward, and to give, both publicly and privately, full credit for excellent work; and blamed, with equal candour, work carried out badly or half-heartedly. I have also given every encouragement to the learner and to a person lacking skill but possessing hopefulness or perseverance.

The modern craze (for I believe it *is* a craze, and will pass away), that the craftsman is going to do nobler work, *per se*, without any designer or design at all, is as unnatural as it is absurd. I have very frequently talked it over with my loyal workers, always to discover that their ideas on the point coincided with my own. A short time ago I went to a "function," taking with me the two craftsmen concerned in working into a concrete form the object to be dedicated, and thus publicly acknowledging their services, and my sentiment of regard for them, as also my sense of the utter futility of producing a design, however powerful, without hands to bring it to good effect. This is, I believe, that *true* union of the Arts and Crafts and *not* the mere *talk* about it.

I ask the men who "prate" only, do they, for one moment, allow their craftsmen to improve (?) a single detail of the hybrid and extraordinary "exhibits" (hateful word!) that one occasionally finds on view at the "Arts and Crafts" Exhibition in Regent-street? I trow not! I have known excellent foremen in large shops who pass their lives among good work, the very *best* of work, who, in my absence, have done their best to ruin the work they were engaged in, for want of some knowledge of that unwritten law of accord and good taste, and the laws of evolution in ornament (which really do exist, in spite of all that may be urged to the contrary). Depend upon it, the laws of division of labour cannot be rightly divorced or broken through, and, while the art-man confines his main attention to his art the craftsman must give equal attention to his craft, whether to the realisation of it in stone, wood, iron, or whatever material it be, both remembering that unity of effort is as important as on board a ship, where the captain, dependent as he is upon his subordinates, is still the chief officer, however kindly he may be to them, or, I might say, perhaps with greater truth, *because* he is kindly, considerate, and just, rather than imperious, in his dealings with his crew.

It was just this habit of sympathy with his fellow workmen that made the architecture of the late J. D. Sedding so excellent and so interesting; not because he took, or allowed to be taken, liberties with his men or his work. That freedom which can be brought about by a personal talk, showing fellowship and good feeling between the artist and his craftsmen, is bound to work well; but not such as accrues from either the neglect of the artist to look after his work, or the priggishness of certain craftsmen who think that work would be much improved by their emancipation from the wholesome control of the artist.

The *true* union, I take it, between the "Arts and Crafts" is that healthy condition of affairs which makes it quite clear from the outset that head, hand, and heart must march in perfect unison and, in the words of Scripture, "the eye cannot say unto the hand, I have no need of thee." The motto of Mediæval times seems to have been "Not the workman but the work," and it was a motto well realised, as the names, both of the artists and of the craftsmen, have been but rarely handed down to us. In the times of the Renaissance this seems to have been different, especially in Italy and France, where, whether they wished it or no, the great *thinkers'* names *have* descended to our own day, but those of the *producers*, painters excepted, but rarely. However humble a man may be, if he works from a high motive, he will rejoice, not because of the vast sums of money he has spent, or with which he has been entrusted, nor even of the elaboration and *richesse* of the works produced under his care, but rather in the sense of fitness, good proportion and beauty of them; and will take an honest pride and gratification to his own soul that such have, in spite of poor professional recognition and miserable financial advantages, made his calling a delightful one; and, though it may not *always* be so, I rejoice to think that there are many "hewers of wood" who still take more pride in doing their very best, even under direction and control, by reason of that feeling of brotherhood to which I have alluded, than they would have done over a piece of costly furniture evolved "out of their own heads." The great enemies to the true union of art and craftsmanship are, I believe, "trades-unionism" and "machinery." Such may be very well in craftsmanship *per se*, but not for works of a partly artistic nature; they take the ground from under the very feet of those whose wish is not only to make the pattern, but also to encourage their fellows to copy it worthily. Even a pair of boots, made without regard to the history and traditions of the shoemaker's craft, must not only be ugly to look upon, but, I fear, most uncomfortable to wear also; and a design made by a craftsman, without some regard for the traditions of the past, both as to design and method of workmanship, would be one that even the "Arts and Crafts" Exhibition would hardly be proud of. No one is more sensible than myself of the very many good results which flow from that Institution as a whole, but, to say that perfect freedom from the control of the master-mind is a thing of the past, so far as it is concerned, would, I think, be the reverse of truthful. Any striving after originality is a good thing, but a thing may be beautiful that is not original, and original without being beautiful. "Design with beauty—build in truth" is an admirable watchword, and, though some may have eliminated all "true principles" from modern work, there is yet a lower bathos still yawning beneath us—that which would ignore all principle whatsoever.

One other point and I have done: If we leave off dealing with those who serve us badly or indifferently, we must, if consistent, be loyal and true to those who serve us well and faithfully. One of my craftsmen, who has worked for and under me for many years, and still talks with honest pride, not of *my* work, but of *our* work, will never be deserted by the writer of this letter, so long as he thus acknowledges the true union of the "Arts and Crafts" in this pleasant and honourable way.

Depend upon it the more the craftsman shows that he *can* be trusted, in matters purely artistic, by the artist, the more *will he* be trusted.

E. SWINFEN HARRIS.

LABOUR IN THE BUILDING TRADE.

SIR,—May I use your valuable columns to draw attention to some serious evils in the present condition of labour in the building trade? This trade is at present in a most properous condition, and all competent mechanics have the opportunity of working full time at a higher rate of pay than has ever been paid before, and so laying by for the slack time which comes periodically to every trade. Instead of doing so, a large number of the men are wasting their time on trivial disputes, and are doing less work for the higher pay than has ever been done before. Surely this is very unfair. Builders are strictly bound to the amount of their contract, and if the trades unions force them to pay a certain minimum rate per hour to mechanics, they should also make it a strict rule that a man is not to be considered a fully qualified mechanic unless he turns out work at not less than the average rate. For instance, no man should be rated or paid as a fully qualified bricklayer unless in ordinary work he can lay at least fifty bricks an hour, or a proportionate amount in more difficult work, and the other trades should do the same. If employers are to be bound to do a certain amount of work for a fixed sum of money they must, in turn, have a guarantee that their employés will work up to a fixed standard, if they are paid full wages. Otherwise, business will become impossible, and the men will find out too late that the way to secure high wages is not by doing less work. Already we are losing trade, owing to the uncertainty of orders being executed in England in consequence of strikes. If the masters will combine, and form a fund to carry the smaller firms through a time of stoppage of trade, they can force the trades unions to cease their present suicidal policy of encouraging men to work badly and slowly, and preventing boys being properly apprenticed and taught trades. The price of building affects every other trade, and if we are to compete with other nations our trades unions must devote as much attention to keeping up the standard of work as they do to keeping up the standard of pay; and the men must understand clearly, that pay is dependent on the quality and quantity of work done, and the profit produced by it. Until this is clearly understood, these disastrous disputes will go on. EUG. M. NICHOLSON.

2 and 4, Old Queen-street, Westminster.

DO WORKMEN SHIRK?

SIR,—The *Municipal Journal* and *London* of January 5 and 12 last, brought this matter forward under the above heading, and several prominent men replied thereon as to whether workmen in the building trade of the present day (bricklayers in particular) do as much work as formerly, and whether it is better done.

Sir Richard Farrant, managing director of the Artisans' Dwellings Company, says the work is not done better, and that there appears to be an unwritten law with the bricklayers that 400 bricks per man per day is the maximum quantity to lay. Mr. Henry Holloway, of Holloway Bros., builders, states that the cost to lay bricks now is 100 per cent. more than ten years ago, and the quality of the labour is inferior. "A Borough Engineer" says the quality of work done now is inferior to what it was formerly and it costs more.

Mr. Alderman Taylor, L.C.C., on the other hand, says the system of work now is entirely different, for men never scamp it, and the work is better, much better. Mr. Stephenson, secretary to the Labourers' Union, states that "the evolution of society renders it necessary that there should be a reduction in the output of labour." (This appears a very neat way of saying a man shall do as little work as possible.) Mr. John Burns, M.P., L.C.C., asserts that any one with eyes to see can see that work is better done, and must therefore necessarily be done slower, and cost more money; and if sometimes work is plentiful and labour scarce, a bricklayer, following the example of an ex-company promoting duke or an ex-lord mayor, will construe his altered position into doing less work.

Now, sir, having spent over forty years actively employed in the building trade, I ought to know something about it, and I have no hesitation in saying that workmen of the present day do not do anything like so much work; and, "to say the least," it is no better done than formerly. The time was when a man would try to do his work creditably, and in as little time as his fellow workmen, but now every man endeavours to do *not more* than his fellow, and in such a manner that it may possibly pass. If in any branch of the trade skilled labour has apparently improved, it is not because of greater skill in the artisan (except in the plumbing trade) but of the adoption of improved machinery and appliances.

Have the three last named gentlemen the personal knowledge of the subject necessary to form a correct judgment? Have they the opportunity of watching and scrutinizing, hour by hour and day by day, the manner in which the work is done? I contend their knowledge is obtained from hearsay. The cook who makes the pie must be allowed to know better of what it is made than the person who eats it. Mr. Alderman Taylor says bricklayers insist upon doing their work well in the way of flushing up, &c.; hence better work. Now the flushing up business is one of the things which bricklayers nowadays persist in not doing; it was formerly done by labourers, but as that is not now allowed by the trade, it is not done at all, without continual insistence by the clerk of works.

Mr. Burns says the 1,000 bricks a day period has gone by, because, now that glazed and pressed bricks are used, it takes much longer to lay them to a sharp and true line, and that Sir Richard Farrant's Streatham estate is built much better than his former estates, notwithstanding Sir Richard's assertion to the contrary. I wish to point out to Mr. Burns that extravagance in design, as at Streatham (as compared with former estates), does not mean better work, and that a brick with a straight and true face ought to be laid quicker than a crooked brick; that it ought not to take longer to do work right than wrong, and that due allowance is always made when glazed bricks are used; also that anybody acquainted with the trade knows that red facings are no better done (and certainly the same applies to party and inner walls) than they have been done for ages past.

What is good brickwork? It is each brick to be laid straight and true, properly bonded and bedded, and this means a mortar bed on every side of the brick which comes in contact with another brick. And this bedding, or grouting, is the most important part of the performance. Our forefathers studied this latter a great deal more than the bonding of the bricks. See the old foundations often dug up in London; and where can you find stronger work?

Mr. Burns also condemns the clerk of works as an unnecessary and expensive adjunct in the building trade, and he intimates that on L.C.C. works several of these gentlemen are employed on one job. Of course, every one acquainted with the trade knows that there is never more than one clerk of works on one job unless it is a very large job indeed; in fact, most of the L.C.C. clerks of works have each several jobs to superintend. I emphatically assert that no work is, or ever has been, properly done unless properly supervised, and it is a slur upon that useful body of men to state that they assist in running up the cost of the work.

I am informed by one of our largest London brick merchants that bricks are now 40 per cent. dearer than in 1890 and 1875, but they are exactly the same price now as they were in 1879. Now, as brickwork costs 75 per cent. more than at any former period there must be something radically wrong, and I contend that, apart from the question at the head of this letter, there are two main causes which help to swell up the cost.

One is the great lack of *esprit de corps* existing between foremen and workmen, and between employer and employed. In former times a foreman mixed more with the men, assisting and showing them how to do it, and often taking a turn at laying bricks; but that sort of thing is not permissible now by the bricklayers; you may tell them, but you must not show them how to work. I have known a foreman to be ordered off the scaffold by

the bricklayers and told to go in his proper place *i.e.*, his office, as he was not wanted on the scaffold.

And surely, as regards the employer, is there not room for the exercise of a little more of the doctrine of charity to those who work for him?

Another great cause is the abolition of apprenticeship, for which the L.C.C. as pioneers of reform are to be blamed. No apprentices or boys are to be seen on any of their works; boys may be allowed to roam the streets to become Hooligans, or the more fortunate may take a stool under a gas flare in some office, and by the time he is a man may earn 10s. less per week than a mechanic.

We in London depend entirely on the country to manufacture workmen for us. There a workman, through apprenticeship, becomes a good artisan, and there, in consequence of a good all-round general knowledge of all branches of the trade, good foremen and clerks of works are obtained. Technical education will never make a mechanic or a foreman or a

CLERK OF WORKS.

LIABILITY OF ARCHITECTS.

SIR,—Some time ago (about two years, I should say) I read that an "Owner" had obtained judgment against his architect for an amount by which a builder's bill exceeded the contract price. Is an architect liable for extras unless he gives a written guarantee or is guilty of culpable negligence or collusion with the builder? Many specifications, however carefully drawn up, have omissions, often very trivial, and of course the builder has to be paid if the items omitted in the specification are put into the work. Is the architect liable for the cost of these items, as the best of men sometimes make mistakes?

C. S. T.

*** It is always dangerous to answer theoretical legal questions, since everything depends on the facts of a case; but it is clear that an architect is not liable for extras—in other words, for damages—in consequence of some negligent act, unless clear evidence of want of proper skill and care can be shown.—ED.

HULL CENTRAL LIBRARY COMPETITION.

SIR,—The present mode of forwarding designs, without motto or distinguishing mark, has some disadvantages, as I have experienced in this instance.

With my plans another competitor's report has been returned. They all bear the same number, put on by the same hand.

I have complained to the Town Clerk, but he repudiates all responsibility and declares the alteration "was certainly not made by any one in my office."

It is too bad that competitors should be the victims of such carelessness.

May I ask, with your kind indulgence, the competitor (who has mine) to exchange reports with me?

A. H. GOODALL.

14, Market-street, Nottingham.

THE METROPOLITAN DRINKING FOUNTAIN ASSOCIATION.

SIR,—It has been brought to my notice that reports are being circulated that this Association is about to discontinue its good work.

May I trespass on your valuable space to give such reports a most emphatic denial, and to state that this Association is, on the contrary, doubling its efforts to provide new drinking fountains and cattle troughs to keep pace with the growth of the Metropolis.

WM. SIMPSON, Secretary.

The Student's Column.

ARCHITECTURAL HYGIENE.

V.—SANITARY CONSTRUCTION.

Walls. Floors.
Damp Courses. Roofs.
Chimneys. Furnishing.
Wall Coverings.

THE late Sir B. W. Richardson, who did so much for sanitary science, said that "The intention and object of domestic sanitation is so to construct houses for human beings, that the various diseases and ailments incidental to bad construction may be removed to the fullest possible extent."

In the following remarks we shall endeavour to point out those defects which should be avoided in the construction of houses, and to indicate the most sanitary way of dealing with the house so as to ensure healthy conditions.

The principal enemy we have to contend with is *damp*, which must be kept out of the building if it is to be healthy and fit for occupation. The materials used in building should therefore be as compact, dry, and as impermeable as possible. The site should always be covered with concrete, as explained in Chapter II., and it is evident that materials which are as non-porous and non-absorbing as possible should be used in the construction of the house, and especially those which hold as little as possible of noxious substances which, when set free, are diffused and cause disease. Bricks should be as free from porosity as possible, wood sound and well seasoned, and plaster and other wall coverings impermeable.

Walls.—In the component parts of a house, walls are an important element, and we may fitly discuss their construction from a hygienic point of view. Walls are usually constructed of brick, stone, timber, or concrete, on the quality of which depends the good or bad character of the structure in which they are built.

The porosity of any building material can be tested by placing it in water for a definite time and weighing it before and after absorption. The following is a list of different materials with their absorption per cent. of their dry weight, according to Rivington:—

Granite	½ to 1	per cent. of its weight.
Malm bricks ...	20 to 22	" "
Grey stocks ...	10	" "
Hard stocks ...	7½ to 8	" "
Common stocks ...	10	" "
Blue Staffordshire bricks ...	6	" "
Good sandstones	8 to 10	" "
Portland stone ...	14	" "
Bath stone ...	17	" "
Kentish rag ...	1½	" "

An ordinary London stock absorbs about one-tenth of its weight. It should be mentioned that a brick backing, which is often only 4½ in. thick, but which should not be less than 9 in. thick, is generally placed behind all stone walls. Care must be taken that the backing is thoroughly bonded with the stone facing.

The principal consideration in building brick or any walls is to keep out the damp. Damp may enter the building in two ways, viz.:—(*a*) horizontally through the walls through damp earth or by rain driving against the surface, and (*b*) vertically, by the action of the ground water, in being drawn up by capillary attraction. (*a*) The horizontal entrance is prevented by a vertical damp course, by hollow walls, by areas, or some impermeable covering such as tiles or cement affixed to the wall. (*b*) The entrance of damp vertically is prevented by a horizontal damp course of some non-absorbent material through which the ground water cannot pass.

Damp Courses.—Before proceeding to discuss the various methods of applying damp-courses to suit different purposes, we will look at the various materials used for the purpose.

1. Two courses of slates in cement, the slates being laid so that they break joint, are a very usual but not very effective way of preventing the uprising of the damp, as the slates are liable to crack with the slightest settlement of the wall.

2. Asphalte is frequently used. Seysell rock asphalte, laid in two layers of ¾ in. each, forms a very good damp course. The ordinary tar asphalte is cheaper, but not so effective.

3. Lead has been used to form a damp course, but is not now often employed.

4. *Callender's* patent bituminous composition may be mentioned, as it has been much used in England. It is sold in sheets of varying widths, and is useful for both vertical and horizontal damp courses. One of the useful properties that it possesses is its elasticity, so that in case of a settlement in the building it is still effective. It should be laid with lapped joints, the pressure of the wall above forming it into one homogeneous mass.

5. Another form of damp course is to place a course of *air bricks* round the walls. These should be formed of vitrified fire or other clay which is non-absorbent, and which, being set in cement on the under and upper surfaces, effectually prevents the entrance of damp, and at the same time ventilates the space under the ground floor, thus preventing any tendency to dry rot in the timbers. In putting damp courses into old buildings where they have been omitted, this is the best and cheapest method, as a course of bricks can be cut out all round the building, and the air bricks inserted in sections.

All *horizontal damp courses* should be fixed at a height of not less than 6 in. above the surface of the ground adjoining the wall, and, of course, underneath any wall-plates and flooring which it is essential to protect from damp.

Illustrating these remarks by actual examples, we have, firstly, as a common instance, (i.) a *house without a basement*, which is simply treated with a damp course placed, as shown in fig. 16, not less than 6 in. above the surface of the ground. It is not advisable to place it nearer than 6 in. to the ground, because water might splash or be blown against it, and so be drawn up into the walls above it.

ii. In *habitable basements*, or, what is the same thing, a building in which the ground floor is below the level of the ground, it is necessary to prevent any damp entering the wall horizontally as well as vertically. This is effected either by means of an asphalte lining in two thicknesses of ¾ in. each, as shown in fig. 18, or by means of what is known as a "dry area" placed outside the wall, and either left open and drained or covered over and ventilated, as illustrated in figs. 17 and 19. This dry area may be 12 in. wide, or it may be only 2½ in. wide, in which case it becomes really a portion of a hollow wall to the basement, fig. 20. The cavity should be carried up 6 in. above the surface of external ground, and a damp course inserted at the base and top of the cavity. In exposed situations, hollow walls may be used with advantage. These walls (figs. 20 and 21) are usually brick and one-half brick thick respectively, and are connected together with bonding bricks at intervals. Architects differ as to whether the brick or half-brick wall should be placed externally. There are advantages and disadvantages in both, but on the whole it seems better construction to put the half-brick wall externally, so that the floor and roof timbers can rest on a solid 9-in. wall.

The bonding bricks are of the shape shown in fig. 20, the reason for which is that rain may not be drawn through from the outer skin to the inner one, and so do away with the advantage of the hollow wall. These bonding bricks are therefore curved upwards so as to prevent the rain being drawn in. The section is also shown in fig. 21 through a head and sill of a window in a hollow wall, showing how the damp in the cavity is prevented from touching the woodwork.

Walls, especially at the seaside, are often protected from the driving rains by having their faces rendered in cement, which, although not generally pleasing in appearance, is certainly effective.

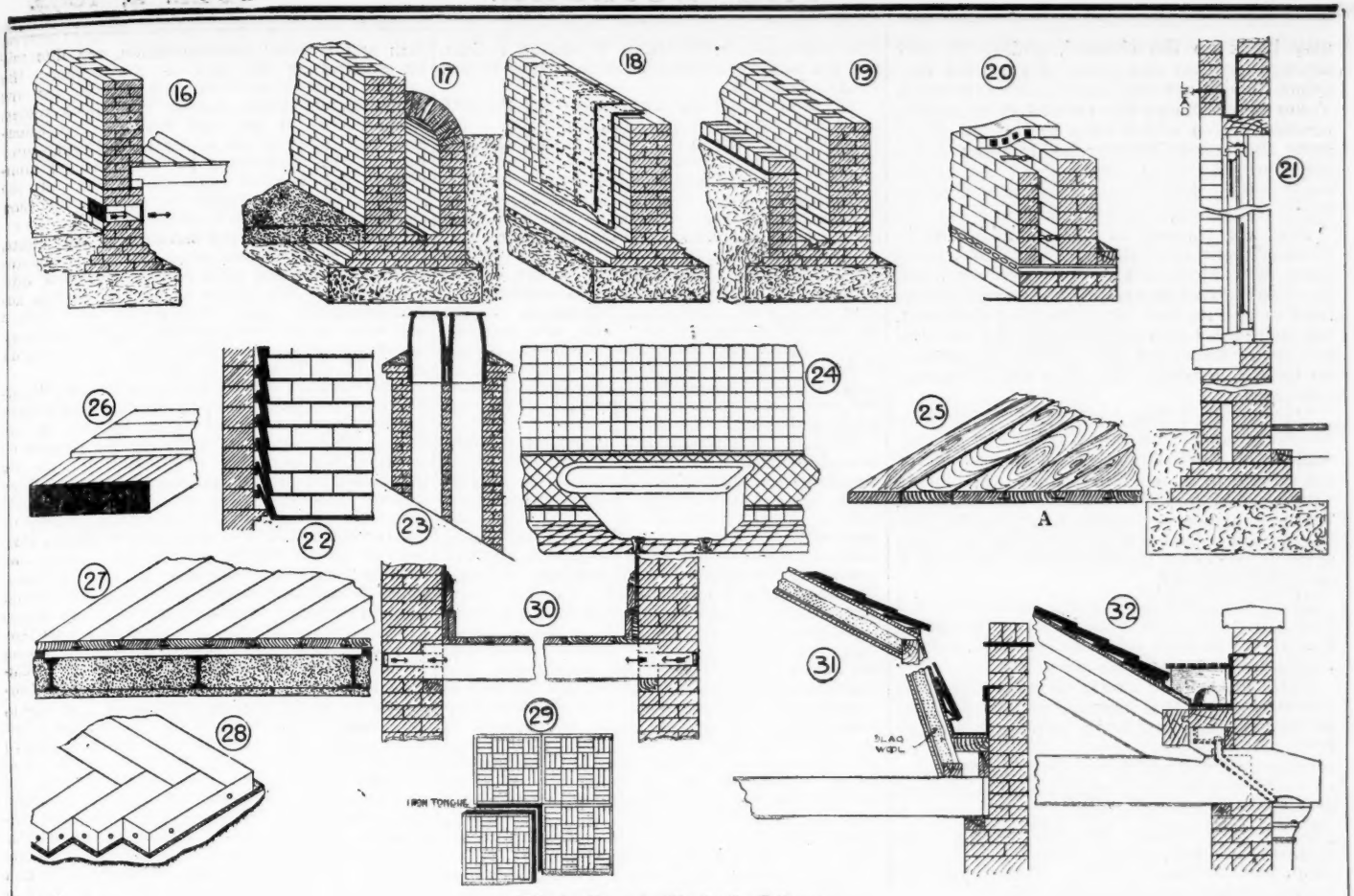
Tile-hung walls, as they are called, are often adopted for the same purpose, and form a well-protected surface on an exposed site. Fig. 22 shows one method of effecting this. Tile battens are plugged to the wall at the proper gauge, and to these the tiles, formed with projecting nibs, are hung. This method of roofing the walls, as it were, is very effective; a tilt is generally given to the bottom courses, so as to throw the rain falling on to it clear off the wall. By using Wright's fixing blocks, battens are dispensed with, the tiles being nailed direct to the blocks. The tiles may also be secured by being plugged direct into the joints of the brickwork.

Old, damp, and porous walls can often be treated with tile hanging, cheaply and effectively, for the prevention of damp.

Chimneys should never have less than one brick external walls above the roofs; they should be built in cement mortar, and provided with a slate in cement damp-proof course just above the roof level, so as to prevent rain water soaking into the roof timbers. Chimneys should be kept as much as possible together, and be as protected as may be, so as to ensure a good draught.

Wall Coverings, Internally.—An ideal wall covering is one which is impervious, and which, having a smooth surface, can be easily washed. In this respect *glazed tiles* are an excellent covering, and can be used in bath-rooms, sculleries, water-closets, and such like places, and can be kept clean and sweet by frequent washing. Fig. 24 shows an application of ordinary plastering finished with a painted surface, which is cheap and effective; silicate paints being preferable to those containing lead. Zinc white should be used in preference to white lead, because it is not affected by sulphuretted hydrogen, and it is more healthy to work with. For bedrooms, distempering is even perhaps better than painting; it is cheaper, and can be executed frequently in bright and cheerful colours.

Ordinary pulp papers are not desirable as wall coverings; they are most unwashable, collect the dust, and are absorbent. To remedy this washable papers were introduced. Cheap papers may be varnished, and so rendered



Illustrations to Student's Column.

more wholesome. In no branches of house furnishing have so many improvements been introduced of late years as coverings. These are too numerous to mention, except that they are of the Lincrusta type, and as easily cleaned by washing, although most of them err in departing too much from a flat surface, for the raised patterns excel as dust and dirt catchers. Enamelled iron set in wooden frames is useful for restaurants and suchlike places, where continual cleansing is necessary. Ceiling coverings are made in the same kind of papers, but plastering is in general use, which, when whitewashed or distempered in colours, answers very well, and can be easily cleaned. Ceiling papers are bad, because of inaccessibility for cleaning, and their power of retaining and multiplying germs. The ordinary lime and hair *plastering* is to be deprecated on many grounds. The *Danville Asbestic* plastering, which has been much used in America and Canada, and is on the walls and ceilings of the Carlton Hotel, has much to recommend it. It is fireproof, having resisted tests up to 2,000° F., germ proof and sound proof; so that it is a material that can be advantageously used in many situations.

Floors may be considered under—

(a) Ordinary.
(b) Solid.
(c) Floor Coverings.
(d) Ventilation.

(a) Ordinary Floors, constructed with wooden joists placed one foot apart and covered with floor boarding, and ceiled with lath and plaster beneath, are unhealthy, because of the accumulation of dirt and dust which takes place. It has been so often pointed out that we cannot expect to know what "Home, sweet home" really means until the dust and vermin collecting cracks between floor boards and ceilings and behind skirtings cease to exist. Every time such a floor is washed it is only another addition to the accumulation of filth which passes through the open joints of the floor boards to rest on the plastered ceiling beneath, as shown in fig. 25. Whenever such a floor is used, it should be covered with grooved and tongued, or ploughed and tongued, boarding, so as to prevent the dirty water and dust from falling between the boards. This method is shown in the fig. at A.

(b) Solid Floors, of whatever form, should be used where possible in order to prevent the chance of dust and vermin being harboured in cracks and crevices. Ordinary wooden joists are sometimes used, placed side by side; this method was patented many years ago by Messrs. Evans & Swain (see fig. 26) for fire-resisting purposes. In this case the floor boarding is nailed direct to the upper surface, and the lower side of the joists have dovetailed grooves formed in them so that the plastering may have a better key, or the joists may be left exposed on the under side, a V joint being formed between the joists,

We have said that any system of solid fireproof floor is preferable to the ordinary floor. It would be foreign to our purpose to enquire into these, but we may mention a system which is practically as good as any of them, and which costs little more than the ordinary combustible wooden floor. The system referred to is that in which steel joists, 5 in. or 6 in. deep, are placed, about 2 ft. apart, and the space between filled up with 6 in. or 7 in. of coke-breeze concrete (fig. 27), composed of coke breeze and Portland cement (about 4 to 1). The concrete is taken 1 in. below the bottom flange of the girders, so as to protect them from fire, and to enable the ceiling to be plastered. The floor-boards can be either nailed direct to the concrete or rest on fillets, about 3 in. by 2 in., laid flat, and fixed to the concrete. The space thus formed is useful for running gas and water pipes, &c. If the boards are nailed direct to the concrete, there is no space for collection of dirt; but in that case care must be taken that the concrete is thoroughly dry before laying the boards, otherwise dry-rot may set in.

(c) Floor Coverings.—The floors of bath-rooms, sculleries, water-closets, larder, lavatories, greenhouses, and sometimes of halls should be covered either with hydraulic pressed tiles, marble, mosaic, or some substance of a non-absorptive character, so that they may be washed down frequently. In the case of lavatories, bath-rooms, and sculleries the floors are best laid sloping, so that when washed down the dirty water may be led, by means of a duct pipe, into a rain-water head or to discharge over a gully trap.

Ordinary basement floors are best finished with solid wood blocks (fig. 28), laid either straight or herring-bone on a 6-in. bed of Portland cement concrete, and in some form of bituminous composition.

For ordinary rooms the best floor covering is either hard wood, such as oak laid in half-batten widths and beeswaxed and polished, or good selected deal, stained and well varnished, forms a good covering. The edges of the boards should be grooved and tongued.

Parquet flooring (fig. 29) may be laid over the whole surface in order to ensure an uniform and impervious surface without cracks in which dust may accumulate. It may be cleaned with a mixture of turpentine and beeswax.

Carpets should *never* cover the whole floor, but should be left with a margin of parquet or stained and varnished boards, so that the corners of a room, where dirt most readily accumulates, can be easily cleaned, and the carpet may be taken up and shaken without moving the furniture, most of which is usually placed against the walls.

(d) The *ventilation* of the space under floors is always necessary where there is a space between the floor boards and ceiling (see fig. 30), and when a wooden floor is placed over the concrete or other foundation laid on the ground. Otherwise dry-rot will set in, and the floor timbering gradually rots away and perishes. This ventilation is effected by means of perforated iron gratings or air-bricks built into the outer walls, and so arranged that cross ventilation is produced. In many old buildings, floors are continually having to be taken up because of this precaution having been neglected.

Roofs and Coverings.—Although attics with sloping ceilings are placed in the roof for economy, they are bad from a sanitary point of view, because of being extremely cold in winter and hot in summer. Care must, therefore, be taken to keep an air space between the ceiling of the room and the outer covering of the roof; or, if the whole of the room is in the roof, to fill in between the rafters with slag wool and to place roofing felt or Willesden paper under the slates or tiles (fig. 31). In all cases it is advisable to have rough boarding and not battens under the slates, the continuous wood surface forming a non-conducting material. The eaves of roofs should project so as to protect the wall from rain, and the latter should not be allowed to run down the walls and make them damp.

Cornices and all projections should be constructed to throw off the rain by means of "throating" and weathering.

Rain-water Gutters should have a sufficient fall to carrry water off quickly to the drain-pipes. *Lead gutters* behind parapets should be wide enough to walk along in (at least 12 in.), and should be provided with snow guards (fig. 32), so that when the thaw comes after snow the snow-water can drain away unimpeded by the bulk of the snow, otherwise it

may block up the channel, finding its way through the tiles and slates of roof, and thus injure the ceilings and internal fittings beneath. These snow-guards are formed of transverse bearers, across which laths are nailed, ¼ in. apart, the bearers being arched to allow of the water passing along the gutter. As to the comparative advantages of different roof coverings a few remarks may be made.

Tiles are warmer in winter and cooler in summer, both important considerations, apart from their appearance. On the other hand, they are heavier than slates, and require stouter timbers, and the bad kinds are very absorbent. But there can be no doubt that, being non-conductors of heat, they are much to be preferred on houses in which the attics are utilised as bedrooms.

Slates possess the qualities of being non-absorbent and light, but they are good conductors of heat, which causes houses roofed with them to be cold in winter and hot in summer, and they are therefore objectionable. These remarks especially refer to the thin Bangor and Welsh varieties, and not so much to the heavy green Westmoreland slates, which are to be preferred.

Lead, zinc, and copper are all used for flat roofs; they are good conductors of heat, and, therefore, bad from this point of view, though their impervious qualities are good.

Furnishing.—The house being built, it is further evident that in furnishing woolly and fluffy materials are bad; heavy curtains to beds and windows, carpets which cover the whole room, and which are *nailed* to the floor, so as to prevent them being properly cleaned and shaken, are all unsanitary. Finally, all materials and fittings that will allow of the lodgment of dust, which absorb dirt in any form, and which on being shaken yield a harvest of dust, should not be used.

OBITUARY.

MR. HARRY BATES.—The sudden death is announced of Mr. Harry Bates, A.R.A., the well-known sculptor. It was in 1883 that Mr. Bates, who was born in 1847 at Stevenage, Hertfordshire, gained the Gold Medal and Travelling Studentship at the Royal Academy Schools, and since then he has contributed regularly to the exhibitions. Lately, the deceased sculptor completed an equestrian statue of Lord Roberts for India, and a statue of the Queen for Dundee. He was elected an A.R.A. in 1892. His model for an equestrian statue of Lord Roberts was exhibited in the courtyard, Burlington House, 1897, and a reduced replica was in the Sculpture Room of the Academy in 1898. His marble statue of "Pandora" is in the Tate Gallery. Amongst his works illustrated in our columns, we may cite: "Hounds in Leash," exhibited in the Royal Academy, *Builder*, June 6, 1891; three bronze panels, subjects from the "Æneid," exhibited in the Royal Academy, *Builder*, June 20, 1885.

GENERAL BUILDING NEWS.

TRURO CATHEDRAL.—The Earl of Mount-Edgcumbe presided over a meeting of the Truro Cathedral Committee on the 27th ult. The executive committee reported that they had received the estimate of Mr. Pearson, the architect, of the expense of the alternative plans of building the nave as a memorial to the late Archbishop Benson—(*a*) with the towers up to the level of the aisle roof, 36,000*l.*, and (*b*) with the towers up to the level of the nave roof, 41,000*l.* They were also informed that 30,000*l.* might be reckoned upon, and were of opinion that they would be justified in proceeding with the work if the contractors' tender does not exceed the estimate. The report was adopted, and it was decided that tenders for the work should be invited from certain selected firms.

PRIMITIVE METHODIST CHAPEL, GRASSMOOR, DERBYSHIRE.—A new Primitive Methodist Chapel has just been opened at Grassmoor. Messrs. Walker & Slater, of Derby, were the contractors, and Mr. J. Wills, Derby, was the architect. Messrs. W. Truswell & Son, of Sheffield, provided the heating apparatus.

NEW CHURCH, FELIXSTOWE.—The progress of additional work towards the completion of the new Church of St. John the Baptist, at Felixstowe, was signalised on the 26th ult., when the corner stone of the chancel was laid. The new work will consist of a chancel, 40 ft. by 25 ft.; a morning chapel for daily services on the north side, 30 ft. by 20 ft.; clergy and choir vestries on the south side, divided by a wooden partition which can be removed so as to form one large room, 35 ft. by 30 ft., for meetings, &c.; and an organ chamber over the choir vestry. The chancel will be divided from the nave by a low brick and stone screen, 4 ft. high, and the vestries and morning chapels will also be divided by screens. It is estimated that 250 additional seats will be provided, and that the cost will be 2,715*l.* The architects are Sir Arthur Bloomfield & Sons, and the building contract is in the hands of Mr. Fred C. Thurman.

WESLEYAN CHAPEL, STOCKPORT.—On the 26th ult. a new chapel in Wood-street, Stockport, belonging to the Wesleyan Methodists, was dedicated. The new chapel is situated near one of the entrances to Hollywood Park, and is of red brick, erected by Mr. Josiah Briggs, of Heaton Norris, from plans by Messrs. Hunt & Sons, Stockport. The seating accommodation is 240, and the cost about 2,000*l.*

NEW ESTABLISHED CHURCH IN EDINBURGH.—At the Edinburgh Dean of Guild Court, on the 26th ult., plans were passed for the erection of a new church at Montpelier, Edinburgh, for the St. Oswald's congregation. The new building, which adjoins Bruntsfield Public School, has been designed by Mr. Henry F. Kerr, architect, Edinburgh. It will be seated to accommodate about 800 people, and the cost will probably be between 5,600*l.* and 6,000*l.*

CHURCH, DOLPHINHOLME, LANCASHIRE.—The new church at Dolphinholme, dedicated to St. Mark, was consecrated recently. It consists of chancel, nave, transept, north aisle, organ chamber, and vestry. The chancel is 34 ft. by 22 ft., and the nave 54 ft. by 36 ft. The vestry is 28 ft. by 10 ft. Rising above the building is a squat tower, which will be surmounted by a dolphin, and contains the belfry. The total length of the church is 88 ft. The sitting accommodation provided is for about 250 persons. Local stone has been used, the work being carried out in broken courses, and the interior is lined with red sandstones taken from the old church. The church is approached by a porch, and the roof is supported by a large chancel arch and two transept arches; whilst three Norman arches divide the nave from the north aisle, and have moulded capitals and bases; another ornamental arch divides the aisle and the north transept. The aisles and passages are flagged, and the chancel floor is paved with ornamental tiles. The contractors were Messrs. Hatch & Sons, of Lancaster; Messrs. Austin & Paley were the architects.

FREE CHURCH EXTENSION, NORTHAMPTON.—Adnitt-road Baptist Church, Northampton, was opened recently. The church has been built by Mr. A. J. Chown, of Kingsthorpe, from the designs of Messrs. Mosley & Anderson, of Northampton. It has cost 1,600*l.*, exclusive of the land on which it stands, and for which 632*l.* 10s. was given. It is in the Early Perpendicular style. It is of red brick, with dressings of yellow Weldon stone. At the rear of the church is the minister's vestry and a deacons' vestry. Under the minister's vestry is the heating basement.

WESLEYAN CHAPEL, WOLVERHAMPTON.—The Building Committee of the new Weslyan Chapel, Darlington-street, Wolverhampton, have selected the plans of Mr. Arthur Marshall, of Nottingham. The sitting accommodation will be kept at 1,250.

BOARD SCHOOL, DERBY.—The new Board School at Pear Tree was opened on the 23rd ult. The new school is situated at the top of Portland-street. The building is of red brick, and when completed will contain several large schoolrooms. As the building now stands it is only a portion of the complete establishment it is proposed to erect. The block at present provides accommodation for 420 infants and 500 children in the junior mixed department. When the building has been finished, it will accommodate 1,800 children. It will be divided into sections of 440 boys, 440 girls, 500 mixed scholars, and 420 infants. The boys and girls' schools, therefore, remain to be erected. These departments will be placed to the right and left of the present structure, which is two stories in height, and is arranged with a large schoolroom in the centre of each floor, with classrooms opening out of it. It is also proposed to build separate schools for cookery and manual instruction at the rear of the site. The architects are Messrs. Naylor & Sale, of Derby.

MARGATE COTTAGE HOSPITAL.—The New Margate Cottage Hospital was opened on the 19th ult. The first wing of the building, intended for the Lucas Ward, was designed by Mr. Drew years ago; and the second wing was designed by Mr. W. J. Mercer, in harmony with the existing wing. The present additions and alterations, forming the Diamond Jubilee Memorial, now follow on the same lines. By the successive additions which have been made, the original building which formed the Cottage Hospital is now surrounded on three sides with new premises. Mr. Mercer was the architect of the present work. The contract price was 1,620*l.*, and the work was carried out by Messrs. E. Padget & Sons, of Margate.

FACTORY, BIDEFORD.—A new collar factory has just been built at Bideford by Messrs. E. Ellis & Son for Messrs. P. Cooper & Co., of London. The architects were Messrs. R. T. Hookway & Son, of Bideford. The building is 320 ft. long, with a gable and bell turret in the centre.

PROPOSED ADDITIONS TO LEITH HOSPITAL.—The scheme to extend Leith Hospital in commemoration of the Queen's Diamond Jubilee is likely to take practical shape in the course of a few months. The extension is to take the form of an addition to the King-street pavilion, whereby the wards in the south end will be incorporated into the new building, and the present wards of six beds on each flat will be made wards of twenty beds. Day-rooms, bath and lavatory accommodation, and lifts will be provided at the end of the wards. The present north wards will be utilised for the administrative offices, doctors' and nurses' rooms, kitchen, &c., of the new wards. The extension will allow of an increase of twenty-seven beds in the King-street pavilion, and on completion the hospital will contain in all 102 beds, besides three isolation rooms. The elevation of the building shows a frontage to King-street on the lines of the existing elevation to that street, but it is treated in a less severe style, and terminates with an ornamental gable and oriel window with balustrading. The nurses' home will provide accommodation for nearly thirty nurses. The buildings will be connected with the hospital by a subway under King-street. The plans have been prepared by Mr. W. N. Thomson, architect, Leith.

NEW COUNTY COUNCIL BUILDINGS FOR EDINBURGH.—A special meeting of the Mid-Lothian County Council was held on the 25th ult. in the County Buildings, Edinburgh, for the purpose of receiving the report of a sub-committee on the question of the reconstruction or re-erection of the County Buildings. The sub-committee reported that after having fully considered the question of the reconstruction of the County Buildings, they were of opinion that the work should be proceeded with as soon as possible, and by a majority of five votes to four they recommended that there should be an open competition in the matter of the designs to be submitted for the proposed new buildings. The committee also recommended that powers should be given to them to advertise, inviting architects to send in plans, and also to draw up conditions for the guidance of competitors. Mr. Welsh, in moving the approval of this report, stated that there was a feeling in committee that to pull down and rebuild would be altogether the better and more satisfactory course to follow. The older members of Council would remember that Dr. Rowand Anderson advised the former committee, and prepared a set of plans for rearranging the interior of the buildings and for putting an elevation towards George IV. Bridge. When he submitted his plans Dr. Rowand Anderson gave in a report in which he said that the elevation to George IV. Bridge had given him some considerable anxiety, and that he had bestowed a great deal of care upon it. To his (Mr. Welsh's) mind, that elevation was not in keeping with the requirements of the site. They had one of the best sites for the County Buildings that could be found in the city of Edinburgh—they had a frontage of about 160 ft. to George IV. Bridge, and a frontage of about 80 ft. to High-street. The proposed new buildings would occupy a frontage to George IV. Bridge of about 100 ft. Mr. John M'Hutcheon Dobbie seconded. Mr. Wilkie moved an amendment to the effect that, while they might invite a few architects to prepare plans, it would be highly inadvisable and a great mistake to throw the matter open to public competition. To advertise for competitive plans would, he thought, deter the best men from coming forward. Mr. Maconnachie Wellwood, in seconding the amendment, also expressed the view that if they threw the designs open to public competition they would probably not get the very best architects to compete. He did not think they could get a more competent architect than Dr. Rowand Anderson. Mr. J. G. Stewart said that so far from feeling that open competition would deter the best architects from sending in plans, he thought the buildings were of such importance that success in competition would be regarded as a feather in any architect's cap. A division was taken, with the result that Mr. Welsh's motion approving the sub-committee's report was adopted by sixteen votes to eleven.

ENLARGEMENT OF BRADFIELD COLLEGE.—A new Boarding House erected on Hog's Hill, in connexion with Bradfield College, has been opened by Earl Stamford. The new building is within easy distance of the College. The architect was Mr. M. Macartney. The building is of red bricks, with stone dressings, and in the centre of the tiled roof is a clock-tower. The interior provides accommodation for fifty boys, and includes a dining-hall, classrooms, bed-rooms, and all the usual offices. It is lighted by electricity, fitted by Messrs. Drake & Gorham, Westminster, whilst Messrs. Haden, of London, supplied the heating apparatus. The builders were Messrs. Foster & Dicksee, of Rugby.

HOTEL, DURHAM.—A new hotel has been erected in Hallgarth-street, Durham, on the site (together with other land acquired for the purpose) of the old Victoria Inn. The architects were Messrs. J. Oswald & Sons, of Newcastle, and the builder was Mr. F. Caldcleugh, of Durham.

CAMPBELTOWN PUBLIC LIBRARY AND MUSEUM, GLASGOW.—The ceremonies attendant on the gifting of Campbeltown Free Public Library to the town took place on the 20th inst. The buildings occupy a central site, having frontages to the harbour, St. John-street, and Shore-street. The building is a one-story structure of early Scottish Renaissance style. It is L-shaped, and has a frontage to the bay of 93 ft., and to St. John-street of 137 ft. The buildings are divided into a library or book-store 47 ft. by 24 ft., giving accommodation for over 10,000 volumes; a ladies' reading-room 24 ft. by 18 ft., occupying the corner of the site, and forming in its octagonal side the main decorative feature of

the front to the bay; a general reading-room 37 ft. by 24 ft.; a museum or picture gallery 48 ft. by 24 ft.; and a general hall or news-room 36 ft. by 19 ft. This latter is the general vestibule, and gives independent access to each department. It forms the memorial hall of the building. Fronting Shore-street is an enclosure laid out as a garden to form an adjunct to the museum for the exhibition of archæological and other exhibits not requiring cover. The curator's house has its frontage to Shore-street and to the garden. The buildings have been erected from designs by Mr. J. J. Burnet, A.R.S.A., Glasgow.

LIVERPOOL STOCK EXCHANGE BUILDINGS.—Some extensive improvements have been effected at the Liverpool Stock Exchange. The Stock Exchange Buildings Company years ago recognised the desirability of getting an extension of their property, so as to have a frontage in Exchange-street East. For this purpose they obtained a narrow strip of houses and shops, about 200 ft. in length, and with a depth varying between 12 ft. and 20 ft., which lay between them and that street, and the preparation of the necessary designs and plans was committed by the company to Messrs. Grayson & Ould, architects, Liverpool. For the new elevation in Exchange-street East, Portland stone and local red sandstone have been used, and it is intended to tone down the Dale-street frontage by altering the windows, especially on the top story, and extensively using the red sandstone for mullions and transomes. The corner of the building at Exchange-street East and Dale-street is very effectively treated with oriel windows rising through several stories. The Exchange-street East elevation presents a rather fine appearance; seven pilasters connected by a frieze mark the extent of the building used for Stock Exchange purposes, and the most notable features are the two large windows flanked by bays. On the ground floor facing Exchange-street East are six or seven shops, where the tenants of the buildings formerly on this site find a fresh habitation. At the north-end of the Exchange-street East property Sainsbury's luncheon bar finds improved accommodation. The scheme of reorganisation provides two entrances, both from Exchange-street East, and these lead to lifts which will be available for the whole of the buildings. Entering by the doorway near the Dale-street, it is at once seen that the outer vestibule has been greatly improved by a window being pierced into the "well." The floor of the Stock Exchange Room itself remains about the same in area, but on the Exchange-street East side a gallery has been erected, with a smoking-room on one side and a reading-room on the other. The reading-room and smoking-room are divided from the main hall by glass partitions. For the lath-and-plaster walls of the Exchange Room glazed bricks have been substituted, without any attempt at ornate decoration. A telephone-room opens out from the Exchange Room. The telegraph office upstairs for the use of members has also been made more compact. The total cost of the alterations, which are being carried out by Messrs. Thornton & Sons, will be fully 20,000*l.* The carving has been executed by Mr. Griffiths, sculptor.—*Liverpool Courier.*

DERBY TECHNICAL COLLEGE.—The Derby Municipal Technical College, which was opened by the Duke of Devonshire on the 19th ult., occupies a site at the junction of Green-lane and Degge-street. The building is really a large extension of the School of Art, the foundation-stone of which was laid in 1876. When the Technical Education Act came into operation the Corporation decided to enlarge the building, and engaged the original architects (Messrs. Waller & Son, of Gloucester) to prepare designs, &c., for the work. The building is of Gothic design, and covers an area of about 17,000 square ft. It is rectangular on plan, and has four elevations. The two elevations facing Degge-street and Green-lane are of wall stone from the Riga quarries, with Hollington stone dressings. The porch forming the principal entrance is situated at the side, projecting from the main building about 6 ft. There are two other entrances. That for art students is on the east side, and that for science students on the south side. The walls of the corridors and staircase have a glazed brick dado, 5 ft. high. The corridors leading to the different rooms on the four sides of the building are lit from two open courts, the walls of which are faced with white glazed bricks. The several floors include a sub-basement, a basement, and first and second floors. The whole of the sub-basement is used for heating and ventilating (which is on the Plenum system, and has been carried out by Messrs. Ashwell & Nesbit, of Leicester). In the basement are the engine-rooms, plumbing shop, room for typography, and a large one for manual instruction, as well as a boiler for generating the steam for heating purposes. The ground floor contains a large art lecture-room, a physical laboratory, and several class-rooms, together with a committee-room, secretary's room, and office. On the first floor is an antique room for art purposes, and a lecture theatre for physical, chemical, and other demonstrations, with mechanical drawing-room. On the top floor are chemical laboratories, together with several class-rooms, and a room devoted to light-and-shade drawing. The floors are on Dennett & Ingle's system of concrete arches. The college will accommodate 1,500. The cost of the whole building has been about 30,000*l.* The contractor is Mr. Henry Vernon, of Derby, and the National Free Wiring Company, of London, have fitted the electric light apparatus.

SANITARY AND ENGINEERING NEWS.

REFUSE DESTRUCTOR, GREAT YARMOUTH.—Last week Mr. J. W. Cockrill, the Borough Surveyor of Great Yarmouth, reported to the Sanitary Committee that the cylinders necessary to form the foundations of the destructor and chimney connected therewith, had been satisfactorily sunk, filled with concrete, and tested. These cylinders are forty in number, are 6 ft. 10 in. and 6 ft. external diameter, built in concrete sections, and filled with the same material. After the concrete had set, each cylinder was weighted with pig iron ten per cent. heavier than the weight to be placed thereon. The cylinders all stood the test well, the average settlement not reaching one-eighth of an inch, and many cylinders not settling at all. The soil through which the cylinders were sunk was of the worst possible description, and so soft that nearly all the cylinders when they had entered it kept 5 ft. below the excavation.

THE NORTH BRITISH RAILWAY COMPANY'S NEW LEITH LINE.—Since the North British Railway obtained possession, in May last, of the ground between the foot of Easter-road and the foot of Leith-walk, Leith, on which they purposed commencing operations in connexion with the construction of their new line between Edinburgh and Leith, considerable progress has been made. The first step in connexion with the work was the demolition of most of the property contained in the oblong area between Glover-street and the foot of Leith Walk, and from there to Whitfield-lane, and some property between Easter-road and Glover-street. To accommodate the tenants of the dwelling-houses demolished, large blocks of tenements of a suitable nature were erected at Halmyre-street and Lorne-street. Building at Easter-road in connexion with the laying of the new line (Contract No. 1) was commenced about the middle of July last, and is being pushed forward as rapidly as possible. The erection of the station buildings (Contract No. 2) is also making satisfactory progress. From the new corner at Whitfield-lane to the foot of Leith-walk, a space of about 192 ft. has been taken in, and from the corner of Leith-walk and Duke-street about 218 ft. of Duke-street has been taken in. The contractors for Contract No. 1 (the laying of the new line) are Messrs. Young & Sons, Edinburgh; and the contractors for Contract No. 2 are Messrs. Cousin, Edinburgh. Messrs. Blyth & Westland, C.E., Edinburgh, are the architects and engineers for both contracts.

BRIDGE, DONCASTER.—A new bridge, constructed over the River Don at Doncaster, to replace the Corn Mill bridge erected in 1780, was opened on the 19th ult. Not only has the road been improved both in width and gradient, but the area of waterway for the passage of floods has been increased from 900 to 1,282 superficial feet. The bridge is not quite complete, but sufficiently so to enable the traffic to resume its old course along the Great North-road. Mr. Isaac Gould, of Leeds, was the contractor for the two 46-ft. spans, and the Corporation have, with their own workmen, done the rest of the work. Messrs. De Borgue & Co., of Manchester, were the contractors for the steel superstructure. The approximate cost of the whole work has been as follows:—West Riding County Council, half of joint bridge, 4,000*l.*; Corporation of Doncaster, 4,000*l.*; Corporation of Doncaster, for mill arches, old lock bridge, land, and sundries, 1,500*l.*; total, 9,500*l.* The design for the two-span bridge was by Mr. J. Vickers Edwards, the West Riding Surveyor, with whom Mr. W. H. R. Crabtree, the Borough Surveyor of Doncaster, has been associated for the purpose of the joint undertaking.

DRAINAGE, &C., BRIGHTLINGSEA (ESSEX).—The scheme of drainage and sewage disposal prepared for this district by Mr. J. J. Taylor, of Westminster, has been approved, and the work is to be proceeded with at once. The sewage-disposal plant is upon the "Ives" antiseptic patents for tidal waters.

REFUSE DESTRUCTOR, LOWESTOFT.—Lieut.-Col. Albert C. Smith, R.E., attended at the Town Hall, Lowestoft, recently, to hold a Local Government Board inquiry into the applications of the Town Council for the sanction of the Board to borrow 4,709*l.* for provision of a refuse destructor at the north-west corner of Smith's Marsh, and 2,100*l.* for the improvement of the North Parade. Mr. W. C. C. Hawtayne, electrical engineer, employed by the Corporation for the purpose of providing a scheme for the electric lighting of the borough, which scheme had been amalgamated with the erection of the destructor, said he had inspected several sites in different parts of the town, and had reported to the Council that the site on Smith's Marsh was the best. He was quite satisfied that there would be no nuisance. The Borough Surveyor (Mr. G. Hamby) also gave evidence.

DRAINAGE, &C., HUNGERFORD, BERKS.—On the 19th ult. a Local Government Board inquiry was held by Mr. W. A. Ducat in respect of an application made by the Rural District Council for sanction to obtain a loan of 7,000*l.* for the purpose of carrying out a drainage and sewage disposal scheme prepared by Mr. E. W. Ives, C.E., of Derby.

STAINED GLASS AND DECORATION.

THE JOANNA BAILLIE MONUMENT, BOTHWELL.—This terra-cotta monument, 17 ft. high, containing four large panels of rich mosaics, was unveiled on the 12th ult. by Miss Hunter Baillie, the grand-niece of the poetess. The design is early Italian Renaissance. On the corners of the scaled ogee roof rest four winged boys, representing Music, Poetry, Literature, and the Drama. This is supported by four enriched arches, with ornamental spandrels, frieze, and cornice resting on twisted columns at the corners, and enclosing a block containing the panels of mosaic. On the upper part of one panel is the portrait of the poetess; on the other three are Bothwell Castle, the Children of Bothwell, and the Apple and Plum Trees respectively, with quotations from Sir Walter Scott and Joanna Baillie below. The monument is the gift of Mr. James Donald, of Anerley Park, near London, a native of Bothwell. The entire work was carried out from the designs of Mr. F. Vincent Hart, of London. The mosaics were made by the Venice and Murano Glass Company, and the terra-cotta by Messrs. Doulton & Co., of Lambeth.

WINDOWS, ASCOMB CHURCH, NEAR YORK.—Two memorial windows have been erected in this church. One of two lights in the chancel represents the "Adoration of the Magi," with angels in tracery. The other, in the south transept, is a lancet light representing "The Virgin," under Early Perpendicular canopies. Both windows were designed and painted at the studios of Mr. J. W. Knowles, of York.

MEMORIAL WINDOW, WEST ST. GILES' MEADOWS, EDINBURGH.—A memorial window of stained glass has been placed in the gable of the western transept of West St. Giles'. The window is one of three lights, with tracery openings above, and the bulk of the space thus afforded for decorative treatment is occupied by a subject, "Christ Blessing Little Children," which fills the main portion of the three lights. A scroll with the text "Suffer the Little Children to Come unto Me" runs across the window immediately below the subject, and the heads and bases of all three lights are treated with canopy work. In the lower part of the centre light an inscription sets forth the object of the memorial. The principal panels in the tracery contain small figures of angels in attitudes of prayer and praise. The composition contains upwards of twenty figures. The work has been executed by Messrs. Barnett & Son, of Leith.

WINDOW, ST. ANN'S CHURCH, WANDSWORTH.—One of the aisle windows in this church has been filled with stained glass as a memorial to the late Vicar of this parish. The subject of the window is "Christ Feeding the Five Thousand." The work has been carried out by Mr. H. A. Hymers, of Chelsea.

MISCELLANEOUS.

PROFESSIONAL AND BUSINESS ANNOUNCEMENTS—Messrs. Dennett & Ingle have removed from 5, Whitehall to 24, Queen Anne's Gate, Westminster, S.W.——Mr. W. L. Trant Brown and Mr. H. H. Humphreys have resigned their positions as Chief Building Surveyor and Deputy Engineer respectively to the Willesden District Council, and are entering into private practice as partners.

SHREWSBURY AND DISTRICT MASTER BUILDERS' ASSOCIATION.—The annual dinner of the Shrewsbury and District Master Builders' Association was held at the Lion Hotel, Shrewsbury, recently. The President, Mr. W. T. Williams, was in the chair, and the Vice-President, Mr. H. Price, in the vice-chair. After dinner, the President proposed the loyal toasts. Councillor Gethin proposed "The Forces," and Mr. Boulton responded. Mr. Devonport proposed the toast of "The Mayor and Corporation," and Councillor Farmer responded. Mr. Peter M. Birrell proposed "The Town and Trade of Shrewsbury," and Mr. Bickerton responded. Alderman Blockley proposed the health of the President and Vice-President, to which those gentlemen responded. The toast of "The Visitors" was proposed by the Vice-Chairman, and responded to by Mr. H. Payne, Baschurch. Mr. Rhys proposed "Success to the Shrewsbury Master Builders' Association." The President, in reply, said though the Association had been in existence for a number of years, it was still practically in its infancy. They all knew the troubles and trials they had to contend with from their workmen, though he did not wish to say a word against their employés. The masters, however, had had some very hard battles to fight, and they could only win their battles by sticking together. They had had in that a lesson from the great strike of the engineers. In some towns the master builders had to put up with great tyranny from the men, and were, therefore, bound to do something to protect themselves and the interests of their customers. As masters, they were quite willing to pay the men fair wages, and all they wanted in return was fair treatment. He considered their Association was deeply indebted to their secretary, Mr. C. Morris, for its present high position was in a great measure due to his exertions.

OPEN SPACES.—The Willesden District Council have secured a three months' option of purchase in respect of the Dollis Hall Estate, ninety-eight acres, for which a sum of about 50,000*l.* is asked; they

invite subscriptions towards that amount, with a view to acquiring the property, and dedicating it, as a public recreation ground, to the memory of the late Mr. Gladstone, who was a frequent visitor there of Lord Aberdeen.—The Hackney Vestry propose to purchase the ground at present occupied by the Ironmongers' Company's almshouses in Kingsland-road, which would prove a welcome boon to the closely populated neighbourhoods of Shoreditch and Hoxton.—Mr. H. Mitchell, of the firm of H. Mitchell & Co., brewers, has, we read, presented to the townspeople of Smethwick a recreation ground with football and cricket enclosures, and a drill-hall, the value of the gift being estimated at nearly 10,000*l*.—At a meeting held on the 22nd ult., under the auspices of the Selborne Society, on the top of Croham Hurst Hills, near Croydon, a resolution was passed calling upon the Croydon Corporation to secure the land in perpetuity for the benefit of the inhabitants, and strongly deprecating the present project to take it for building purposes. Croham Hurst, which, we are informed, belongs to the Whitgift Charity trustees, lies between South Croydon and Purley, forming part of the range of the Oldhaven Flint pebble beds, covered with shingle and gravel, wood, bracken, and heath, which, to the north-east, is known as the Addington Hills and Common, near Shirley.

THE MARTYRS' MEMORIAL CHURCH.—It is proposed to collect subscriptions for completing this church, which was built in 1870-1 in memory of the martyrs who suffered at West Smithfield. In June, 1871, were consecrated the nave, north aisle, and north transept; a south aisle has been built since, and the contemplated addition of a south transept and a vestry will cost, it is estimated, 3,000*l*. Mr. E. L. Blackburne was the architect of the church, which stands in St. John Street-road.

WESTMINSTER ABBEY.—An important book upon the history and architecture of the Abbey is nearly ready for publication, in large imperial quarto size, and only 250 copies will be issued; the book will contain seventy-five collotype prints. Mr. J. T. Micklethwaite, F.S.A., architect and surveyor to the Dean and chapter, has written the architectural portion of the text, the historical account is by Mr. H. J. Feasey, and Mr. Edward Bell, M.A., F.R.S., supplies a description of the earlier sepulchral monuments and tombs. The publishers are Messrs. Bell.

MASTER BUILDERS' ASSOCIATION, WESTON-SUPER-MARE.—The annual dinner of the members belonging to the local Master Builders' Association was held on the 25th ult., the President, Mr. W. Dyer, occupying the chair. During the evening Mr. H. Butt proposed the toast of "Architects and Surveyors," and Messrs. H. F. Price, H. Dare Bryan, and H. Nettleton replied. Mr. F. G. Reed proposed "Visitors and Honorary Members," to which the Presidents of the Bristol and Bath Master Builders' Association and Mr. Lawrence Bowen responded. The last toast was that of "The President, Vice-President, and Secretary of the Master Builders' Association," which was submitted by Mr. E. E. Baker, and acknowledged by Messrs. W. Dyer, W. A. Keen, and W. H. Shorney.

NORTHERN COUNTIES FEDERATED BUILDING TRADE EMPLOYERS.—On the 24th ult. the annual meeting of this Federation of Building Trade Employers was held at the Royal Hotel, West Hartlepool. The President (Mr. Walter Lowry) presided. The Secretary (Mr. Wilton A. Ryecroft) presented the report, and the accounts for the past year were submitted and adopted. Mr. Lowry was unanimously re-elected President of the Federation, and Mr. Ranken was re-elected Vice-President. The business of the afternoon was afterwards transacted, at the close of which it was decided to hold the next meeting at Middlesbrough. The representatives were then hospitably entertained by the West Hartlepool Master Builders' Association. In the evening a meeting of the members of the affiliated associations took place, over which Mr. Walter Lowry presided. Amongst those present were Councillor D. Ranken (Sunderland), Messrs. J. Shewan (South Shields), J. Davison (Stockton), T. Dickinson (Middlesbrough), R. Watt (Hartlepool), J. W. White (Sunderland), T. Weatheritt (Newcastle), Alex. Pringle (Gateshead), Councillor Proud (West Hartlepool), Messrs. W. J. Robertson & J. S. Wilson (South Shields), S. F. Davidson (Newcastle), Councillor Atterby (Stockton), Messrs. R. Heslop (Newcastle), J. Howe (West Hartlepool), J. Elrick (Sunderland), Thomas Hunter (Washington), W. Wilson (South Shields), E. Moody (West Hartlepool), and others. The President said he would like to say a few words about the progress made by the Federation during the past year. The large increase in membership and the hearty support that the Federation was receiving throughout the North was most gratifying and encouraging. A short time ago he had represented the Federation at a meeting held at Leeds, the chief object of which was to form the Northern Centre of the National Federation of Building Trade Employers. This meeting was of a most successful nature, and they would gather some idea of how the Federation movement was growing when he informed them that the delegates at that meeting represented upwards of 3,000 employers in the North alone. As regards the other divisions of the Federation, the West of England, South Wales, and South-Western Counties were in good working order, and strong Federations were being formed in the Midland Centre and South-Eastern Counties, from which they would gather that the formation of the National Federation of Employers would soon be completed. At the last meeting it was mentioned that at Jarrow and Hebburn, and also in the Wallsend district, there were a good number of employers who had not an association of their own, nor were they connected with any association. Since then the secretary and himself had called together the employers of these districts, and explained to them the advantages of federation, with the pleasing result that a new association was being formed, viz., the Jarrow, Hebburn, and District Master Builders' Association. With regard to the Wallsend employers, they had decided to become incorporated with the Newcastle, Gateshead, and Tyne District Master Builders' Association. A general discussion then took place, in which, amongst others, the following matters were touched upon: Procedure in case of strikes or lock-outs; model by-laws relating to building and sanitary arrangements being framed by Corporations without co-operation of builders and architects; general form of contract between builders and architects, &c.

CHANGES IN HIGH HOLBORN.—Further rebuilding, and upon an extensive scale, is about to take place. On the south side, the block of houses Nos. 326-332, with Middle Row-place and Tennis-court, between the London and County Bank and the "Old Holborn Bars" public-house, No. 333, is to make way for an extension of the Birkbeck Bank, with an entrance on the site of No. 329, to be erected after Mr. T. E. Knightley's plans and designs. The new buildings will have a frontage along the west side, south portion, of Staple Inn-buildings. The houses on the east side of Staple Inn-buildings, together with the adjoining block, Nos. 334-6, High Holborn, are also being demolished, and, we are informed, the Prudential Assurance Company will construct a terrace-walk over their site, to pass along the side of the Inn and its garden, as a new thoroughfare between the main road and the east end of Southampton-buildings, where the (old) Birkbeck Bank now stands. The premises in High Holborn acquired for the Birkbeck Bank stand on the site of the (old) Temple, as sold by the Templars, after their migration in 1184 to Fleet-street, to the Bishops of Lincoln, and afterwards converted into Southampton House. In 1656 Southampton House was pulled down, and New Southampton-buildings, fronting Holborn, were erected on a part of its site; the present Southampton-buildings, to the south and west, occupy the garden ground of the earlier home of the Wriothesleys, whose property there ultimately passed, in 1727, to Sir Edward de Bouverie, and his brother Sir Jacob de Bouverie, afterwards Viscount Folkestone, whose son was advanced Earl of Radnor. The (old) Mechanics' Institute in Southampton-buildings was founded in December, 1823, by Dr. Birkbeck. Some years ago remains of the Templars' former church were found in the rear of the houses in High Holborn, and it is very likely they will again be brought to light when excavations for the new buildings are made round about the little courtyard which forms the south portion of Middle Row-place. In sinking a well for purposes of the bank, about 200 ft. deep, through the chalk, many interesting things, including various sea-fossils, have been recently found. The block of buildings, known as Middle-row, that stood in the street in front of the houses we mention, was pulled down about thirty-five years ago. On the north side of High Holborn, between Southampton-row and Southampton-street, new premises for Parr's Bank, Limited, with shops and offices, are being erected upon the site, about 15,000 ft. superficial, of Nos. 121-6, formerly occupied, in part, by the W.C. branch of the General Post Office. Messrs. Ford, Son, & Burrows are the architects. The contractors are Messrs. J. Simpson & Son, of Paddington-street, W.

DANGEROUS STREET HOARDINGS.—At a meeting of the Vestry of St. Margaret and St. John, Westminster, held on the 25th ult., at the Westminster Town Hall, under the presidency of Mr. Hayter, the Works and General Purposes Committee brought up a report calling attention to the risks to which the public have been exposed during the recent high winds by reason of the excessive height of hoardings on the public highway. After discussion, a resolution was passed to the effect that it be a standing order of the Vestry that no hoarding upon or over the public highway be sanctioned under any circumstances of a greater height that 12 ft. without the previous sanction of the Works Committee; that every hoarding be required to be surmounted by a sufficient "fan," of such width and at such angle as will ensure the public safety, and that proceedings be forthwith taken against licensees in all cases of infringement of conditions and regulations upon which the licences are granted.

THE SOUTHAMPTON BARGATE.—At Southampton Town Council meeting on the 25th ult. the question of the Bargate and the traffic under it came up for discussion. The Council declined to allow any scheme of removal or mutilation, but referred the question of a circus around the Bargate to a committee, to report to a future meeting. The great objection to the Bargate at present is the fact that the trams, which are now the property of the Corporation, are to be worked by the overhead system of electricity, and a difficulty arose owing to the height of the middle arch. This has been overcome by a scheme for reducing the level of the roadway. —*Times.*

LEEDS BUILDERS' EXCHANGE CLUB. — The seventh annual meeting of the Leeds Builders' Exchange Club was held on the 24th ult. in the Club-rooms, Boar-lane. Mr. S. Blunt presided. The report contained the following:—The finances of the club are still far from satisfactory. The fault lies not with the merchants connected with the club, who do their utmost for the welfare of the building trade in Leeds, but with the builders themselves, for whom your committee have done so much good. Anything appertaining to the building trade has been taken up by them in earnest, and they therefore ask for the support of every builder. During the year the Yorkshire Building Trades' Federation has been put on a firm basis, and a branch has been formed in Leeds. The whole of the members of the club had been enrolled, and their subscriptions paid out of the funds of the club. All builders or builders' merchants who now became members of this club will be enrolled as members of the Federation without additional cost of subscription. The objects of the Federation are well known by every business man, and the builders of Leeds will be able to appreciate the labours of the executive of the federation in case of any unreasonable demands being made upon them by the various unions of workmen, or in case of a strike.—There was a discussion on the report. The Chairman, replying to a question by Mr. W. Nicholson, said that, so far as his memory served him, they were not losing members to any considerable extent, and as a matter of fact the receipts during the past year had been greater than in 1897. The committee would be glad of guidance and assistance, and would welcome the co-operation of the Master Builders' Association. It was urged during further conversation that it was extremely important to get better premises for the club—premises which would afford them a good commercial-room and committee-rooms for each section of the trade. The report and balance-sheet were adopted. The officers were then appointed as follows:—President, Mr. Wm. Bower; vice-presidents, Messrs. C. F. Wilkinson, W. H. Vickers, J. Matthews, George Burnell, and J. Wilby; committee, Messrs. E. Umpleby, W. Lolley, I. Rishworth, J. N. Smith, A. Wheater, A. Lambert, and W. Nicholson; treasurer, Mr. Arthur Mountain; secretary, Mr. J. Jackson; and auditor, Mr. F. A. Holdsworth, chartered accountant.

BYRON STATUE FOR ABERDEEN.—Mr. Pittendrigh Macgillivray, A.R.S.A., sculptor, Edinburgh, has reported recommending that this statue should be a bronze one. He estimates the total cost at 1,600*l*.

APPOINTMENTS.—At a special meeting of Wishaw Commissioners on the 24th ult. Mr. W. R. Copland, C.E., Glasgow, was appointed engineer in connexion with the carrying out of the new Wishaw water scheme, in room of Mr. Tait, Burgh Engineer, whose death was recently announced. Mr. William Rodger, who has acted as assistant to Mr. Tait for about seven years, was appointed interim Surveyor of the Burgh.—At a meeting of the Ayr Works Committee of the Town Council on the 20th ult. it was agreed to recommend that Mr. John Young, C.E., Assistant Engineer, Burgh Engineer's Department, Edinburgh, be appointed Town Surveyor and Engineer of the Burgh of Ayr. Mr. Young was appointed Sanitary Engineer and Inspector of Drainage in Edinburgh eleven years ago, and was subsequently promoted to the position of Assistant Engineer.

SCOTTISH BUILDING TRADES FEDERATION.—The quarterly meeting of the executive of the Scottish Building Trades Federation was held on the 25th ult. in the Station Hotel, Stirling, Mr. James Leslie, builder, Aberdeen, President, in the chair. Members were present from Inverness, Aberdeen, Arbroath, Dundee, Perth, Edinburgh, Glasgow, Hamilton, Coatbridge, and Ayr. The secretary, Mr. James L. Selkirk, submitted a report dealing with the various matters remitted by the annual meeting in October last. These included (1) the formation of new branches, as to which encouraging progress was being made; (2) the issue of the monthly organ; (3) the operation of the Workmen's Compensation Act, 1897, the rate of premium to insure against which was generally recognised, in view of the working of the Act, as much too high, a committee being appointed to consider fully the whole question; (4) the proposed "general conditions of contract," which was still under the consideration of the various parties concerned, and which it was hoped would result in a mutually satisfactory arrangement; and (5) the formation of a special fund for the purpose of meeting exceptional requirements, besides a number of other matters on which there was a full discussion. Thereafter the half-yearly meeting of the Federation was appointed to be held in Dundee in April next.

WAKEFIELD MASTER BUILDERS' ASSOCIATION.—The first annual meeting of this Association was held at the Brunswick Hotel, Wakefield, recently, Mr. John Bagnall in the chair. Mr. Bagnall was re-elected President, Councillor Judge and F. W. Denholm, Vice-Presidents, and Mr. Denholm was elected as additional representative to the Executive Committee of the Yorkshire Federation of Building

Trade Employers. After the meeting, the first annual dinner was held. The guests were Mr. John Spink, of Sheffield, President of the Yorkshire Federation; Councillor Nicholson, of Leeds, Vice-President; and Mr. S. Hanson, of Halifax, Secretary.

CARPENTERS' HALL LECTURES.—A lecture was given at Carpenters' Hall on Monday last, the 30th ult., by Mr. J. Mansergh, entitled "The Bringing of Water to Birmingham from the Welsh Mountains." Our readers are aware that the lecturer is the engineer of the works, and he was, therefore, enabled to give many valuable statistics, and to deal practically with the engineering aspect of the scheme. The subject has been so frequently considered, however, that there was very little of novelty for Mr. Mansergh to dilate upon. Several photographs were thrown on to the screen, and if the optical lantern apparatus had been in working order, the audience might have appreciated them all the better—for these were evidently intended to be a strong point in the lecture. One of the best of these views was a bird's-eye glance, taken from a model, over the concession obtained by the Birmingham Corporation in the valleys of the Elan and its tributaries, whence the water is to be obtained. Sections through the walls of certain dams were also shown, and the lecturer explained each in detail. Most of the lantern slides were, however, of a more popular character, and we need not dwell upon them.

SALE OF MACHINERY AND PLANT.—The remainder of the plant used in connexion with the construction of the Burrator Reservoir has just been sold by Messrs. Parkhouse & Sons, of Plymouth. This was the second sale held since the completion of the works. Every lot offered was sold, and good prices were realised. A five-ton steam crane by Smith, of Rodney, realised 350*l.*, and a five-ton steam derrick crane by the same maker 160*l.* Dormitories and dwellings, trollies, hydraulic rams, tip wagons, and steel rails were disposed of at good prices.

NEWCASTLE AND DISTRICT BUILDING TRADES EXCHANGE.—The first annual dinner of the recently formed Newcastle, Gateshead, and District Building Trades Exchange was held on the 26th ult. in the Exchange Buildings, Grainger-street. Mr. J. G. Walker presided. After the loyal toasts had been duly honoured Mr. G. G. Laidler submitted "The Architectural Profession and the Building Trades." Mr. Laidler said that although not himself a builder, he took a very warm interest in the Building Trades Exchange. For many years he had been associated with architects and builders, and that association had been of the most pleasant character. He was perfectly sure that Newcastle was, in respect of these two professions, entering upon an era of prosperity, for they had only to look at the projects of railway extension which were being put forward by the North-Eastern Company, and the street improvements which were to be carried out by the Corporation, to find a guarantee of much work in the near future for both builders and architects. It was, he continued, a little too much to hope that another Richard Grainger would arise to complete the streets in the same style as Richard Grainger did, and to repeat his marvellous architectural achievements—achievements which could not but call forth their greatest admiration. One of the most important of the contemplated street improvements was, to his mind, the proposed extension from Grainger-street to New Bridge-street; and he hoped that whatever architects had charge of the elevations would endeavour to carry out the work on similar lines to Market-street at the present time. After remarking that there should be some effort made to discourage the litigation now so constantly occurring in the building trades, he said he would like to say a word with regard to the Compensation Act. That Act affected them to a certain extent, and he thought it was only fair that they should give it a reasonable term of trial. He thought that the small amount they had to pay for the insurance was not such a tremendous sum. He coupled with the toast the names of Colonel Haswell, Mr. W. H. Allen and Mr. R. H. Millican, who replied. The next toast was "The Exchange," proposed by Mr. J. S. Robson. Speaking of the necessity for such an institution, Mr. Robson said that though, with the exception of the great agricultural industry, the building trade was the largest in the country, though it did not appeal to their imagination in the same way as others of their staple industries, it employed the largest capital and the largest number of men. He trusted that the Exchange might prosper and extend its influence to the whole of the North-East of England. He should like to allude to the present-day system of contracting, which led, he alleged, to much friction and sharp practice on the side of both architects and contractors. He thought there might be surely some better method devised of letting contracts—a method which would be to the advantage of architects, builders, and contractors alike. The Chairman responded to the toast, and remarked that many architects had refused to join the Exchange, or, at any rate, had not availed themselves of the opportunity of joining it, from a mistaken idea that they might be drawn into trade disputes, or might, in some manner, be apt to compromise their clients. There were many ways other than those of making the institution of use. After other allusions to the work which the Exchange might do, the speaker went on to remark that though they had not yet arrived at that stage when they could call the venture a positive success, they would continue for a good while to endeavour to deserve it, and he had every confidence that they would eventually achieve this end. Mr. Wm. Sutton, jun., also responded and gave an account of the Exchange. They had now 170 members, though they required 200 at least before they could make it a financial success.

CAPITAL AND LABOUR.

DISPUTE IN THE NORWICH BUILDING TRADE.—At a meeting of the Norwich Master Builders' Association on the 26th ult., held to consider the threatened rupture in the building trade with regard to the laying of Broseley tiles, the following letter was read from Messrs. Boardman & Son:—"Dear Sir,—In view of the disastrous effect that a lock-out of bricklayers would have on the coming season in the building trade, we think it advisable to make a suggestion that we hope will reconcile both sides. As we understand the question, the masters insist on the right to let out tiling to merchants who supply the tiles, thus ensuring a price to cover the laying. On the other side, the men insist that the laying of tiles is, and has been, bricklayers' work, and not slaters'. We can see no reason for a serious dispute in so simple a matter, and would suggest as a fair settlement that while the masters preserve their right to take an estimate from the merchants for supplying and laying tiles, they shall make it a condition with any firm undertaking this class of work that such merchants shall employ bricklayers to lay the tiles. We are sending a copy of this letter to the association of both masters and men, and trust that some settlement may be acceptable, and on our part we are quite ready to do anything we can to bring about a friendly understanding, and thus avoid much strife and mischief.—Yours faithfully, Edw. Boardman & Son. Mr. J. H. Hatch, Secretary Master Builders' Association." After considerable discussion, in which most of the builders present took part, it was decided to accept Messrs. Boardman's suggestion as a fair settlement of the question, and the following resolution was carried:—"That the letter received from Messrs. Boardman be accepted in its entirety as a settlement of this question, and that the best thanks of the Builders' Association be tendered to Messrs. Boardman for the opportune and friendly mediation which they offered." The members of the Association, however, felt that the time had arrived when this unfortunate dispute should be officially made public, and the officers of the Association were therefore instructed to communicate the result to the Press, and to particularly point out that the Builders' Association had all along been desirous of a friendly settlement. As far back as January 12 they had made an offer to the men to refer the whole matter to the decision of an arbitrator. But this offer having been declined by the men's Association, the matter had become very grave and threatening. Notwithstanding the refusal of their conciliatory advances, the Builders' Association in the same friendly spirit had now decided to accept the mediation of Messrs. Boardman & Son with a view to the speedy and final settlement of the dispute.—The threatened lock-out has been averted. The masters, it is stated, have conceded the point, and the men withdrawn will return to work.

ABERDEEN JOINERS.—The employers having declined to grant the rise of standard wages asked, viz., from 8d. to 8½d. an hour, though willing to make certain other concessions, the union men came out on strike on the morning of Wednesday, February 1. About 600 operatives are on the strike roll. The Scottish Building Trades Federation will support the Aberdeen master joiners in connexion with the dispute.

LEGAL.

CASE UNDER THE WORKMEN'S COMPENSATION ACT:

WHAT IS "A SCAFFOLDING"?

A JUDGMENT of considerable interest and importance was delivered by Judge Stonor on the 27th ult. at Marylebone County Court, the case having been heard before him on December 16 and January 10. The applicant was a labourer, named James Stack, and he claimed damages under the Workmen's Compensation Act, from Messrs. Coulsell Bros., builders, London, for personal injuries sustained whilst in the respondents' employ. The important facts of the case were given in the judgment, which was to the following effect:—

The applicant was helping to lay a joist 25 ft. long. He had hold of one end, and a carpenter the other. The latter let his end fall, and the joist twisted and fell on the applicant's leg, injuring it considerably.

The defence was that the accident happened whilst the applicant was at work on a building which did not "exceed 30 ft. in height," and was not being "constructed or repaired by means of a scaffolding."

There was an ordinary dwelling house more than 30 ft. high, with a shop on the ground floor and a show room at the back, built over an addition to the original basement.

At the back of the show room, and over the projecting basement, the building was in the course of erection, and was much less than 30 ft. in height. It consisted of four brick piers, and of a roof resting solely on the four piers, and excepting the connexion of the piers with the adjacent walls, the same was a completely separate building, so that if the dwelling house and shop and basement had been taken down carefully, the building in question would have still remained. On the floor of the building in course of erection were two pairs of trestles, with two boards upon them, as a temporary scaffold to enable the men to work at the roof.

To bring the case within the Workmen's Compensation Act (Section 7), it must be shown that the accident occurred (1) "in, upon, or about a building 30 ft. high"; and (2) that such building was being "constructed or repaired by means of a scaffolding."

It was unnecessary for the Judge to decide as to the first point, as, with regard to the second point, he thought that the building was not being "constructed or repaired by means of a scaffolding."

He thought that the proper meaning of "a scaffolding" (at all events, for the present purpose) was that in which it was used by every one in common parlance, and as given in the "Glossary of Architecture," namely, "a temporary erection of poles, planks, &c., for the use of workmen in building walls, or erecting any work which they cannot otherwise reach." That seemed to imply something fixed and secured; not such a thing as two pairs of trestles with boards across them, unfixed and unsecured. There was strong argument in favour of attaching the meaning given by the "Glossary of Architecture" to the words under consideration, from its manifest restrictive intention and operation with regard to the building business. If the words were to extend to every unfixed and movable erection of trestles, boards, ladders, &c., they would be wholly nugatory, inasmuch as every building 30 ft. high must be constructed by such means, and the words "constructed or repaired by a scaffolding" would have no effect, restrictive or otherwise. Again, the position of this further restrictive provision coming immediately after, and in conjunction with, the restriction as to height, pointed, he thought, clearly to such "a scaffolding" as is used of necessity in the construction or repairing of buildings of that, or, at all events, of considerable height.

He therefore found for the respondents upon the second point, and dismissed the application, with liberty to appeal if necessary.

ANOTHER case under the Workmen's Compensation Act came before his Honour Judge Waddy, in Sheffield County Court on the 26th ult. The plaintiff, a bricklayer named Bernard Sharkey, of 26, Colliers-row, Park, brought an action to recover 1*l.* per week during total incapacity, and 10*s.* per week during partial incapacity, from William Kirkham, Attercliffe, contractor. The claim was made to obtain compensation for injuries received by plaintiff through the giving way of scaffolding while working for defendant at Huntsman's Works, Pothouse-lane, Sheffield, on November 3 last. Mr. A. M. Wilson represented plaintiff, and Mr. A. Neal appeared for defendant.

Mr. Wilson said that when the accident occurred the parties were employed on a furnace stack at Huntsman's Works. Plaintiff was at work on a scaffold, which gave way, and he fell to the ground, a distance of 10 ft. or 12 ft., sustaining serious injuries, including two broken ribs and four teeth knocked out. He was earning 2*l.* 15*s.* per week at the time, but he was only claiming 50 per cent. upon 2*l.*, and not upon the full amount. Plaintiff came within the scope of the Act, because at the time of the accident he was in or about a factory and on a building exceeding 30 ft. in height. The plaintiff was on a factory, but not on his master's premises. Mr. Wilson went on to say that he should incidentally get an expression from his Honour, first, whether the Act meant a workman should be on his master's premises; second, whether he need be on the premises at all; third, whether it was sufficient for him to be on the premises of a third person. The other points which would be raised were with respect to the height of the building, whether the building could be considered to end with the eaves of the building, whether the top of the roof should be considered as the top, or whether the furnace stack should be taken into account. Mr. Wilson contended that the top of the furnace stack was the top of the building, and that made it 36 ft. high. If he was not allowed to measure in the stack the building would only be about 25 ft.—(Mr. Neal: 18 ft.)—He urged that he could count in the top of the furnace stacks, and in support of this point quoted from the London Building Act of 1894, which stated that the chimneys could be considered in calculating the height of the building.

Bernard Sharkey, the plaintiff, corroborated Mr. Wilson's opening. The wall upon which he was working was about 35 ft. high.

Cross-examined by Mr. Neal, plaintiff said he was working on a scaffold on a wall about 4 ft. away

from the smelting stack. The stack was not finished. He had been working on this particular wall for about half an hour before the accident occurred. He had not worked on the furnace after the foundation was put in. Previous to that morning the nearest point he worked to that place was 20 yds. away. Another workman called out to him to come and see what he was doing, and as he stepped forward to do so the scaffolding tipped up.

A labourer named John Conway said he saw plaintiff immediately after the accident. The wall was between 30 ft. and 40 ft. high. Witness left the job because incompetent workmen had put the scaffolding up, and he did not know when he might have to go on it.

William Kirkham (the defendant), in reply to Mr. Neal, said the highest point of the building, apart from chimneys or furnace, was 18 ft., and an additional 10 ft. up to the roof-tree. The highest point of the furnace stacks from the ground floor was 36 ft., of which about 8 ft. was the height of chimney above roof. On November 3 witness saw the state of the building within three-quarters of an hour of the time when the accident occurred. Plaintiff was working upon a partition wall dividing the pot house from the steel house, and this wall was about 3 ft. in height above ground level. It was not connected by underground foundation with the furnaces. There was a connexion overhead with the furnaces. The furnace stacks at the time of the accident were about level with the top of the roof —namely, about 28 ft. high. They were not above it. No part of the building—furnace stacks or anything else—was above 28 ft. high at the time of the accident.

Other evidence having been given, Mr. Neal addressed his Honour on behalf of defendant. Having pointed out that the highest amount that could be recovered was 1*l.* per week, and could not exceed five weeks, Mr. Neal discussed the meaning of the law with regard to the height of the building. He maintained that there was an absence of reliable evidence that the building exceeded 30 ft. in height at the time of the accident. It would not do to urge that the building would ultimately be 30 ft. high. That had been ruled by law. But, assuming that the chimney stacks were 30 ft. high, and upwards, the question was whether they could be counted in as part of the building at all. He contended that to count in chimneys as part of the building was stretching language to undue lengths, and was never contemplated.

Mr. Wilson, for the plaintiff, contended that his witnesses who were working on the building were more likely to be accurate in their opinion as to its height than defendant and his son, who had no data whatever to prove what the state of the building was. The building had been taken up 30 ft. when the accident occurred. Moreover, in this case it was not a chimney in the ordinary acceptation of the term; it was one long continuous furnace, and as much part of the building as any other. As to the proviso that a plaintiff must be "in or about a factory," this was a factory, and plaintiff was working there.

His Honour said the amount claimed was by no means unreasonable. These compensation cases were bringing forward principles the courts had to settle one after the other, and a nice job they had in prospect. In this case, whatever he thought about it, and he did not think very well about it, he was bound by the statute, although he must confess with a desire to find the other way, to give judgment for the defendant.—*Sheffield Telegraph.*

A CURIOUS point came before his Honour Judge Snagge at the Northampton County Court on the 25th ult., under the Workmen's Compensation Act. An engine-smith, named Edgar Stearne, sued his employer, Mr. William Allchin, Globe Works, Northampton, for compensation for injury to his wrist, which has totally incapacitated him for six months. The claimant was treated at the local hospital for three weeks. He then returned to work, but as soon as he began to use tools his wrist became exceedingly painful, and without strength. After ten days he told the foreman he could not stay there unable to do his work properly. He left, and a few days later sent in notice of claim for compensation. Mr. Ryland Adkin, barrister, took the preliminary objection that the notice was not delivered before the claimant had voluntarily left his employment. Mr. Phillips, for claimant, contended that as the man only left because of the pain in his injured arm and inability to work, his leaving could not have been voluntary.

His Honour said that the claimant thought at first that he was well enough to continue his work, and went back to his employment, but found himself in such pain that he could not keep on. He told the foreman so, and went away. If such going away was not voluntarily going he did not know what was. It was his own will and wish. No one told him to go, or attempted to prevent his staying. It was a point which did not seem to have been raised before, and it would be open to the claimant to go to a Divisional Court. His Honour held that notice in accordance with the Act had not been given, and, further, that the employer was prejudiced by the want of such notice. That being so, the action was barred.—*Daily News.*

DISPUTE BETWEEN ELECTRICAL ENGINEER AND ARCHITECT.

THE case of Stegman *v.* O'Connor came before a Divisional Court of Queen's Bench composed of Justices Bruce and Ridley on the 24th ult., on the appeal of the plaintiff, an electrical engineer, from the decision of Mr. Verey, the Official Referee, on the ground that his decision was against the weight of evidence.

It appeared that the plaintiff, Mr. G. Stegmann, in 1898 contracted to erect an electric light installation at the defendant's house at Clapham for the sum of 76*l.* 10s., exclusive of the cost of certain fittings to be supplied by the defendant, and the work was to be done in accordance with specifications prepared by Mr. Harris, the defendant's architect, and to his satisfaction. Under the contract the plaintiff was to be liable to a penalty if the work was not completed within the time specified by the contract. Mr. Harris was not satisfied with the way in which the work was executed, and after certain correspondence had passed between him and the plaintiff he called in another electrical engineer to complete the work. The plaintiff, on the other hand, contended that the work was properly carried out by him, and that if it was not done within the time specified by the contract, it was the defendant's fault, and brought his action to recover the 76*l.* 10s., the amount of his contract. The Official Referee allowed the plaintiff a certain amount for the actual value of the work taken over by the engineer subsequently called in by the defendant, but mulcted the plaintiff in a penalty of 50*l.* for not completing the work within the time specified by the contract, the result being that judgment was entered for the defendant on the claim and counterclaim for 38*l.* 1s. Hence the present appeal of the plaintiff.

Mr. Tindal Atkinson apeared for the plaintiff; and Mr. Clavell Salter for the defendant.

At the conclusion of the arguments of counsel their lordships intimated that they would see the Official Referee on the matter and give judgment in a few days. It might, however, be necessary to send the case back to the Official Referee.

THE PROPERTY IN SUB-SOIL:

IMPORTANT CASE IN THE COURT OF APPEAL.

THE case of the Vestry of St. Mary, Battersea *v.* the County of London, and Brush Provincial Electric Lighting Company (Limited), came before the Court of Appeal, composed of the Master of the Rolls, and Lords Justices Rigby and Vaughan Williams, on the 30th ult., on the appeal of the defendants from a decision of Sir Francis H. Jeune, the President of the Probate, Divorce, and Admiralty Division, sitting as an additional judge of the Chancery Division in April last, granting the plaintiffs a mandatory injunction ordering the defendants to remove certain wires and mains which they had laid under the footway of Trinity-road, Battersea. The appeal raised the important question of whether the sub-soil in which the wires were laid formed the property of the Local Authority, or of the adjoining owner. It appeared that the defendant company held a provisional order to supply electric current within the district of Wandsworth. A portion of Trinity-road was admittedly in the parish of St. Mary, Battersea, within the area of supply of the Battersea Electric Lighting order. In October, 1895, the defendants broke up and laid their pipes in a certain portion of Trinity-road, and on October 29, 1895, a letter was written by the plaintiffs to the defendants' solicitor, complaining of this, and saying that the company had no right to do what they had done. On October 31 the defendants replied, expressing regret for what had taken place, and saying that their sub-contractors had laid a cable within the Battersea parish without any authority from them. The company in that letter asked permission to keep the cable where it was; but the Vestry declined to allow this, and the defendants took up the cable. In September, 1896, the defendants began to lay down their pipes at another point of Trinity-road, on the left of Cockerton-road, and for about 100 ft. it was admitted that the wires were in the soil of the parish of Battersea. On November, 1896, the Vestry, by letter, called upon the defendants to take up so many of the pipes as were in the parish of Battersea, and to restore the pavement within seven days. The defendants replied that they could not admit that they were acting without authority, or that they were not entitled to do what they had done. The plaintiffs thereupon brought the present action for a mandatory injunction calling upon the defendants to remove the wires in question. Sir Francis Jeune held that the Vestry had vested in them the area in question in which the wires had been laid, and that the defendants had no right to do what they had done, and gave judgment for the plaintiffs for a mandatory injunction, calling upon the defendants to remove the wires, but suspended the operation of the injunction pending the result of the present appeal.

Mr. Cripps, Q.C., and Mr. Shaw appeared for the defendants (the appellants); and Mr. R. Bray, Q.C., and Mr. Chubb, for the plaintiffs (the respondents).

Mr. Cripps, on behalf of the defendants, submitted that the plaintiffs were not entitled to a mandatory injunction, as on the authority of the case of Baird *v.* the Mayor, &c., of Tunbridge Wells, the sub-soil in which the wires in question were laid was not vested in the Vestry, but belonged to the adjoining owners. Therefore, though the defendants might have been trespassers *ab initio* in breaking up the street in the first instance, so far as the Vestry was concerned it was not a continuing trespass, and therefore the plaintiffs were not entitled to a mandatory injunction.

Mr. Bray for the plaintiffs argued that he could maintain the injunction, as though the Vestry might not have a statutory right of property in the sub-soil, they had statutory power of control over it.

At the conclusion of the arguments of Council their lordships held that on the authority of the case of Baird *v.* the Mayor, &c., of Tunbridge Wells, the Local Authority had only vested in it such property in the street as was necessary for its control, protection, and maintenance, and that, therefore, as what the defendants had done was not a continuing trespass the mandatory injunction could not be maintained. There was no order as to costs.

DAMAGES AGAINST A BUILDER:

AN INTERESTING POINT.

THE case of Smith *v.* Johnson, which came before Mr. Justice Bruce, sitting without a jury in the Queen's Bench Division on the 1st inst., raised a somewhat important point to builders as to the right of their clients to recover from them damages for expenses incurred by them by reason of defective materials used in building and not in accordance with the requirements of the London Building Act, 1894.

It appeared that the plaintiff, a lodging-house keeper in Whitechapel, employed the defendant, a builder and contractor, to build a dormitory to one of his lodging-houses, and contracted with the defendant to supply the mortar. The mortar was supplied and the building erected. After the building had been erected the plaintiff was served with a notice from the London County Council to pull down and rebuild, on the ground that the mortar was not composed of one part of lime to three parts of grit or sand, in accordance with the Act of 1894. The plaintiff, in accordance with the notice, pulled down and rebuilt, and brought his action to recover from the defendant the whole cost of pulling down and rebuilding, and also the loss of ground rent. It was proved that the mortar was defective, and his Lordship found that it was so supplied by the defendant. The plaintiff also proved that in a wet state the inferior quality of the mortar could not be detected.

Mr. Rufus Isaacs, Q.C., and Mr. Groser appeared for the plaintiff, and Mr. McIntyre for the defendant.

Mr. Rufus Isaacs argued that the damages were the natural consequence of the defendant's act and that the test was whether the defective quality of the mortar could have been detected before being used. He submitted that it could not and that the defendant was liable for what happened by its use.

On the other hand, Mr. McIntyre contended that the damages were too remote. He submitted that it could not have been in the contemplation of the parties that if the mortar was bad, the plaintiff would have to pull down and rebuild. If the defendant supplied bad mortar the plaintiff should have rejected it.

At the conclusion of the arguments of counsel, his Lordship, in giving judgment, said that the question was whether the plaintiff, by reasonable diligence, could have discovered the defects in the mortar before using it. He came to the conclusion on the evidence that he could not when the mortar was in a wet state before being used, and that the cost of pulling down and rebuilding could properly be recovered from the defendant, and he was also entitled to damages for loss of ground-rent.

Judgment was accordingly entered for the plaintiff for 101*l.*, with costs.

STREET INSPECTION CHAMBERS:

IMPORTANT DECISION.

AT the Southwark Police-court on Tuesday, Mr. Paul Taylor gave his decision in a case in which Mr. Bernard Dicksee, District Surveyor for the Newington District, summoned Mr. William Coat, Surveyor of Roads to the Vestry of St. Mary, Newington, for failing to give a building notice in respect to two structures under the footway in Newington Causeway. The Vestry of Newington is the authority empowered by Provisional Order to supply electricity in their district, and recently have been laying mains throughout Newington Causeway. At an interval of every 150 yards an inspection chamber is being constructed, and the question raised by Mr. Dicksee was whether he was entitled to a notice under the 145th Section of the London Building Act. In his evidence he stated that the inspection chamber was approximately 5 ft. 9 in. by 6 ft. 6 in., the walls being of 9-in. brickwork, the whole being covered in by a construction of wrought-iron joists and flagstones. The chamber was constructed of sufficient capacity to accommodate a man. Mr. Dicksee (who conducted his own case) contended that the inspection chambers, such as were being constructed, were

"structures" within the meaning of the Building Act.

Mr. Ricketts, solicitor, who appeared for the defendant, said that, as guardians of the public way, the Vestry resolved to lay their mains underground, instead of carrying them overhead. He contended that the inspection chambers stood in the same position, legally, as those connected with the sewers. They were not "structures," he maintained, because in no sense could they be said to be connected with underground premises. It was clear that the work referred to by the 145th Section must be work in connexion with a building or structure. A large question was at stake, for, should the inspection chambers be declared to be "structures," the District Surveyor would be entitled to certain fees. Moreover, if every kind of work in the streets was to be subject to the supervision of the District Surveyor, then the Vestry's function, as the street authority, would become merely nominal.

Mr. Paul Taylor held that the chambers were covered by the words "building structure or works," contained in Section 145. He should, therefore, inflict the nominal penalty of 1s. and 2s. costs on each of the two summonses.

In reply to Mr. Ricketts, his Worship declined to state a case, on the ground that it was purely a question of fact.

MEETINGS.

FRIDAY, FEBRUARY 3.

Architectural Association.—Mr. Christopher Whall on "Stained Glass"—with practical demonstration. 7.30 p.m.

Royal Institution. — Dr. Victor Horsley on "The Roman Defences of South-East Britain." 9 p.m.

Sanitary Inspectors' Association.—Sixteenth Annual Dinner, Holborn Restaurant. 6.30 p.m.

Glasgow and West of Scotland Technical College (Architectural Craftsman's Society). — Discussion on "Building Deficiencies," to be opened by Mr. Isaac Low. 8 p.m.

SATURDAY, FEBRUARY 4.

Architectural Association.—First Spring Visit, to the Carlton Hotel, Haymarket. 3 p.m.

British Institute of Certified Carpenters.—Visit to Russell Hotel at 3 p.m. Meeting at 6 p.m., paper by Mr. J. D. Macnair on "Sound in Buildings."

South Kensington Museum (Lecture Theatre).—Dr. Lockyer on "Astronomical Instruments." II. 3.30 p.m.

MONDAY, FEBRUARY 6.

Royal Institute of British Architects.—(1) To announce the name of the person the Council propose to submit to the Queen as a fit recipient of the Royal Gold Medal, 1899; (2) Mr. A. Hessell Tiltman on "Public Baths and Washhouses." 8 p.m.

Royal Academy.—Lectures on "Greek Architecture," by Professor Aitchison, R.A. III. 4 p.m.

Surveyors' Institution.—Adjourned discussion on Mr. W. Weaver's paper on "The London Building Act and the Official Supervision of Buildings." 8 p.m.

Carpenters' Hall, London Wall (Free Lectures on Matters connected with Building).—Professor Banister Fletcher on "Ornament." 8 p.m.

London Institution.—Mr. H. W. Handcock on "Everyday Applications of Electricity." Practical demonstrations. 5 p.m.

Society of Engineers.—The President for the past year, Mr. William Worby Beaumont, will present the Premiums awarded for Papers read during the year. The President for the year 1899, Mr. John Corry Fell, will deliver his Inaugural Address. 7.30 p.m.

Society of Arts (Cantor Lectures).—Dr. Samuel Rideal on "Bacterial Purification of Sewage." IV. 8 p.m.

Leeds and Yorkshire Architectural Society.—Mr. G. P. Bankart on "British Plaster Work: Its Past and Future." Illustrated. 6.30 p.m.

Liverpool Architectural Society.—Mr. E. Prioleau Warren on "Ideals and Realities of Modern Practice." 6 p.m.

TUESDAY, FEBRUARY 7.

Northampton Institute, Clerkenwell.—Lectures on Mediæval Architecture, by Mr. Francis Bond, M.A. V.—"Architecture in Syria and Southern France." 7.45 p.m.

Institution of Civil Engineers.—Mr. J. A. Jones on "The Waterworks of the Madras Presidency." 8 p.m.

WEDNESDAY, FEBRUARY 8.

Society of Arts.—Mr. James Swinburne on "Nernst's Electric Lamp." 8 p.m.

Liverpool Engineering Society.—Mr. W. H. Preece, C.B., F.R.S., on "Electricity at the General Post Office." 8 p.m.

Northern Architectural Association.—An evening of notes, with limelight lantern illustrations, by Mr. J. T. Cackett. 7.30 p.m.

Edinburgh Architectural Association.—Paper by Mr. T. A. Croall, F.S.A. (Scot.), entitled "Some Words about Edinburgh Architecture: (*a*) Placing of Buildings; (*b*) The Exits from Public Places." 8 p.m.

St. Paul's Ecclesiological Society (Chapter House, St. Paul's).—Mr. Philip M. Johnston on "Low Side Windows." Illustrated by Lantern Views. 7.30 p.m.

Sanitary Institute.—A discussion on "Supply of Water to London by the Welsh Scheme." To be opened by Mr. R. E. Middleton. 8 p.m.

THURSDAY, FEBRUARY 9.

Royal Academy.—Lectures on "Greek Architecture," by Professor Aitchison, R.A. IV. 4 p.m.

Institution of Mechanical Engineers.—Annual General Meeting for the election of officers for ensuing year. The following papers will also be read and discussed: "Fifth Report to the Alloys Research Committee: Steel," by Sir William C. Roberts-Austen "Machinery for Book and General Printing," by Mr. William Powrie; "Evaporative Condensers," by Mr. Harry G. V. Oldham. 7.30 p.m.

Society of Antiquaries.—8.30 p.m.

Institution of Electrical Engineers.—Continuation of discussion on: (1) "Rules for the Regulation of the Wiring of Premises for Connexion to Public Supply Mains," by Mr. J. Pigg. (2) "The Regulation of Wiring Rules," by Mr. C. H. Wordingham. (3) "The Institution Wiring Rules," by Mr. R. E. Crompton. If time permits, a paper will be read on "Electric Traction by Surface Contacts," by Mr. Miles Walker. 8 p.m.

FRIDAY, FEBRUARY 10.

Institution of Junior Engineers (Westminster Palace Hotel).—Joint meeting with the Discussion Section of the Architectural Association. Paper on "Factory Design," by Mr. J. H. Pearson. 7.30 p.m.

Institution of Mechanical Engineers.—Annual General Meeting (concluded). 7.30 p.m.

Royal Institution.— Professor H. S. Hele-Shaw on "The Motion of a Perfect Liquid," illustrated by experiments. 9 p.m.

Institution of Civil Engineers (Students' Meeting).—Mr. W. Middleton on "The Electrical Driving of Engineering Shops." 8 p.m.

SATURDAY, FEBRUARY 11.

Royal Institution.—The Right Hon. Lord Rayleigh on "The Mechanical Properties of Bodies." I. 3 p.m.

South Kensington Museum (Lecture Theatre).—Mr. J. H. Pollen, M.A., on "Furniture." I. 3.30 p.m.

London and Provincial Builders' Foremen's Association.—Annual Dinner, Anderton's Hotel, Fleet-street. 6.30 p.m.

Edinburgh Architectural Association.—Visit to Cable Power Station, Tollcross.

RECENT PATENTS:

ACCEPTED SPECIFICATIONS.

Open to Opposition until March 25.

[1897.] 23,945, Wilcke & Karpan, Process for Ornamenting Finished Wooden Surfaces. 23,843, Smith, Production of Acetylene. [1898.] 1,045, Stratford, Gas Meter Index Altered for Official Testing. 1,054, Legge & Cooper, Gas Burner for Acetylene Gas, &c. 1,236, Lynde, Baths, Lavatories, Basins, Sinks, &c. 1,389, Robinson, Forming and Jointing Sheet Metal Structures. 1,549, Davison & Lucas, Acetylene Lamps. 1,912, Andrews, Telephones. 2,015, Crocker, Incandescent Mantles. 2,454, Thorp, 5,701, Clayton & Steward, 5,941, Smith, and 7,521, Daix, Generators for Acetylene Gas. 2,749, Candy, Purification of Sewage and Polluted Waters. 3,525, Sims, Harrop, & Harrop, Syphon Flushing Cisterns and Tanks. 3,708, Marshall, Conduits. 4,274, Morrison, Road Breaking Machines. 4,663, McFarlane, Portable Gangways. 5,486, Jennings & Morley, Water and other Closets and Urinals. 5,867, Hitchin, Cord Holders for Blinds. 5,895, Ratel, Domestic Fire Grates. 5,986, Brindle, Plinths, Pedestals, &c. 6,350, Waddington, Carbons. 6,664, Jones, Combined Hydrant and Standpipe. 7,059, Russell & Cottrell, Road Scarifiers. 8,211, Arbenz, Knife Blades. 11,116, Kemp, Testing Drains and Soil Pipes with Chemicals. 14,402, Foster, Unions of Water-closet Basins with the Flushing Pipe. 17,095, Bynoe & Cubison, Means or Apparatus for Receiving and Delivering Gas. 19,623, Funnell, Heating, Ventilating, and Draught-regulating Apparatus. 19,855, La Soc. Roger et Rathier, Electrodes for Electrical Accumulators. 21,734, Williams, Central Draught Lamp Burners. 21,755, White, Electrical Meters. 21,894, Hutchison & Findlay, Earthenware Pipes. 23,573, Ewing, Earthenware Pipe Joints. 24,535, Shellhammer & Garner, Tool-holders. 24,795, Brandt, Insulating Conduit Tubes. 25,018, Hasselmann, Treating-Wood and other Vegetable Fibres for Preserving Waterproofing, &c. 25,301, Spinette, Furnace Grates. 25,311, Carduck, Window Frames, Sashes, and Sash-bars. 25,711, Anderson, Urinal Stall. 26,067, Gover & Proctor, Holder for Electrical Glow-lamps. 26,068, Siemens & Halske, A. G., Electrical Glow-lamp Fittings. 26,690, Newton, Shakespeare & Hunt, Kettles, Bottles, Pots, Cans, and other Vessels having Spouts attached thereto.

ABSTRACTS OF PATENTED INVENTIONS.

21,547.—CLOSET SEATS AND HINGES: *T. R. Kay.*—To retain the seat normally in a raised position the action of a compressed spiral spring is used to operate upon a part of the hinge. The back half of the seat is fastened by pivotted eccentrics, which engage with the basin's rim or recesses made in the basin.

21,561.—STEP-LADDERS: *R. W. Vaughan.* — The ladder, adapted for outdoor use, has its upper end pointed, and rests against a back-strut, whereon is a cross-bar to bear against the back edges of the two side-pieces. The end of the strut rests against a metal plate recessed in the front of the step next above it.

21,570.—BALL AND FLOAT VALVES: *O. H. Jones.*—Through the valve-casing projects a spindle, whose end engages with the end of the float-lever, which is supported by a pin upon two guides. The other end of the spindle carries a checking piston within a chamber, to prevent noise as the valve closes in cutting off communication between the outlet and the supply. In a modified adaptation a plunger takes the place of the piston, and the valve spindle is fixed horizontally.

21,627.—COUPLING OF PIPES, CONDUITS, &C.: *S. O. Kjellström.*—For coupling cement pipes or conduit blocks, used for conveying water, carrying electrical cables, and so on, the inventor adopts a pair of metal bars, which he secures to each block. The hooked ends of the bars are embraced by straps, and the straps are tightened with wedges. By another method of coupling iron rods are secured with cement in holes that are formed in the blocks.

21,628.—SASH LINES AND PULLEYS: *U. G. McQueen.*—The pulley casing is formed with an extension that is seated in a recess made in the lintel of the window frame, and is screwed thereto, and the casing fits within a slot in the lintel, the casing also has an extension that hangs down and fits into a notch in the pulley-stile.

21,680.—BOLTS FOR HAND-RAILS, MOULDINGS, &C: *H. Foster, J. Hayes, and F. T. Greenwood.*—Two wings are made upon the bolt, they are forced into the wood, and answer the purpose of dowels, the wings are tapered and stepped, whilst the nuts are serrated so that they may be driven on.

21,718.—PIGMENTS: *R. Strobentz & J. Fricd.*—For the manufacture of black pigments from carbonaceous materials, such as, for instance, lignite; the material is first finely ground, and then treated with a solution of chloride or sulphate of iron, whereby a black pigment is obtained; by a variant process the carbonaceous substance is treated with a solution of tannic, gallic, or pyrogallic acid before it is mixed with the salt of iron in solution.

21,758.—CRANES: *J. Campbell.*—The inventor has sought to improve upon the invention No. 23,280, of 1896; the car-wheels run upon rails carried by trestles, and a boom, mounted upon the car, has a slot lengthwise, and rails for a trolley which carries the shovel; two sheaves in the trolley are provided for the lifting and lowering rope, and the closing and opening rope, respectively, of the shovel, the former rope runs up from the trolley to between two sheaves at the top of the crane and thence to the winding-drum of the engine for the shovel, and the latter rope is adjusted in a similar way; the shovel guy-rope is passed from the top of the crane over pulleys attached to a weight and at the end of the boom; one part of the trolley-rope goes round a sheave in the end of the boom, thence to another sheave near the boom's middle point, and thence to the trolley-engine; the other part is connected likewise to the trolley's other end; the car may be fitted with a hopper for the discharge of its contents into a railway waggon below.

21,784.—IRON FENCING: *S. Bayliss & J. Sadler.*—The standards and vertical bars are made of T or angle-iron, with flanges perforated for the horizontal bars, whereof each is made in two parts set at right angles—the one part that projects is passed through the holes in the vertical bars, engaging therein by notches; when the vertical and horizontal bars are thus adjusted together, wedges are driven in, or a locking-bar is put through the holes. The horizontal bars are scarfed or lapped together, or jointed at the standards, for expansion through heat or for adaptation to inequalities of the surface; thus the component parts can be readily separated and made up into bundles.

21,790.—LAMPS AND STOVES FOR LIGHTING AND HEATING: *H. S. Bishop & C. Salmon.*—Gas is enabled to pass from a lower chamber, by means of nozzles and tubes, into the mixing chamber; between the two parts of the (Bunsen) burner is inserted some insulating packing, and a spring maintains the portion of the burner which carries the mantle.

21,811.—PILE DRIVERS: *W. Drühl.*—To effect automatical lifting and release of the ram-block it is provided that—we will suppose the block is falling—a rod within the block shall be driven upwards, when the pile is reached, and shall so turn an arm mounted above the block that the arm shall be held between two under-cut jaws that will close over it; the arm's outer end engages with the chain (which moves continuously), and the block is lifted until a wedge above it strikes an adjustable stop and so opens the two jaws, whereby the inner arm resumes its former place in order that the block may fall.

21,826.—CHIMNEY TOPS: *A. F. Roe.*—Two side outlets are made in the straight outlet, which is closed at its top, one outlet being uncovered, and the other having guards which open on either side, the outlets are enclosed by a skirt which rests by means of lugs upon the guards.

21,831.—ACETYLENE LAMPS: *Wizard Manufacturing Company.*—A central conical socket, having a conical plug and a clamped pad of filtering material, is fitted on to the carbide chamber, whose cover is screwed in by means of a handle, the conical plug surrounds a threaded valve-casing which bears against a spring washer tightly, and also encloses a screw-valve; complete combustion is provided for by a lava gas-tip, having side air-holes, that is placed upon the casing, the screw-valve passes through a slot in the combustion chamber; another pad, to act as an absorbent, is supported by wire netting within the carbide chamber, and a valve regulates the passage of water through the pad, upon which a spring presses a block of carbide; a spring safety-valve is fitted on to the carbide chamber, and an indiarubber non-return slit valve admits air into the water-chamber.

21,836.—WATER HEATERS: *G. Shrewsbury.*—A bath "geyser," or similar heater, has its casing fitted with a heater and gas-burner, the water circulating in sections of the heater and passing through the surrounding jacket. The water as it flows is heated by the gases from the burner which escape through the cover.

21,838.—LIFT VALVES FOR TAPS: *S. & H. Richards.*—This contrivance comprises an elastic seat or valve fitted beneath the holder, which has a guide or extension to prevent any upsetting of the valve. When the valve is pressed downwards, the rubber or other elastic material presses against its ring-seat. The action is obtained, by preference, from a screw-down spindle, and that the flow of liquid may keep the valve clean, a syphon-shaped passage is adopted.

21,909.—JOINTS FOR DRAIN AND SEWER PIPES: *A. Johnson.*—An annular recess is fashioned around the tapered spigot end of one pipe, and a similar recess is fashioned for the socket end of the other pipe, the two recesses are to be filled with cement.

21,921.—BOARDS FOR LIGHT WATERPROOF AND FIREPROOF STRUCTURES: *C. W. Luther.*—These are made by superposing (crossed grainwise) sheets of veneer and fastening them together with an admixture of casein or similar substance, about 60 per cent., slaked lime, 15 to 40 per cent., and water. The boards are made to be fixed to wooden—though preferably iron—rafters and posts; a preservative composition for outward application can be obtained by adding from 5 per cent. to 30 per cent. of coal tar to the dry cement.

22,028.—DIVIDERS AND COMPULSORY SCALES: *R. F. Oswald.*—A series of parallel scales to show lengths, squares, cubes, areas of circles, and so on, is marked upon the half-rounded legs of the dividers, and a link is pivotted to one leg and to a sliding index upon the other leg; if the dividers are openen to measure any particular distance, that distance, or its square cube, and so on, may be read upon the scales opposite the index; the instrument when closed will serve as a holder for a pen, pencil, &c.; a cap being fitted upon its points.

22,090.—WASTE WATER-CLOSETS AND THEIR FLUSHING: *J. & S. H. Dibble.*—The invention affects waste water-closets of the kind described in Nos. 18,086 and 26,102 of 1896. The novel arrangement provides for the discharge of the sink into a tipping basin, which is emptied by means of a pipe into a trapped receptacle fixed above the flushing syphon of the water-closet. In another form the sink may be fitted beneath, with an extended trap, shaped troughwise, and having a dip plate.

COMPETITIONS, CONTRACTS, AND PUBLIC APPOINTMENTS.

COMPETITIONS.

Nature of Work.	By whom Advertised.	Premiums.	Designs to be delivered.
*Additions to Town Hall	Shoreditch Vestry	50*l.* and 25*l.*	Mar. 22
*House	Doncaster Grammar School Trustees	do.	Mar. 30
*Market Hall and Shops	Leeds Corp.	150*l.*; 100*l.*; and 50*l.*	June 1
*New Board Room, Offices, &c.	Wandsworth & Clapham Union	100*l.*, 60*l.* and 40*l.*	No date

CONTRACTS.

Nature of Work or Materials.	By whom Required.	Forms of Tender, &c. Supplied by	Tender to be delivered.
*Cast Iron Pipes and Special Castings	Cork Corp.	H. A. Cutler, Town Hall	Feb. 6
Alterations to Station, Chippenham	G. W. Ry. Co.	G. K. Mills, Paddington Station, W.	Feb. 7
Railway Bridge, Bathampton. Somt.	do.	do.	do.
Engine House, Shed, &c. Sunbridge-road	Bradford Corp.	J. H. Cox, City Surv. Town Hall	do.
School, Abbey Hulton	Stoke-on-Trent Sch. Bd.	R. Scrivener & Sons, Archt Hanley	do.
Main Sewer, Bank Hall Lane, Hale	Bucklow R.D.C.	J. M'Kenzie, Surv. 7, Market-st. Altrincham	do.
House, Liverpool-road, Walmer	Walmer Estate Co.	Hinds & Sons, Archt. Deal	do.
Seventeen Houses, Haugh Shaw, Halifax	.....	M. Hall, Archt. 29, North-gate, Halifax	do.
Additions to Hollowgates, Sackville-street, Barnsley	.....	H. Crawshaw, Archt. 13, Regent-st. Barnsley	Feb. 8
Vicarage, St. John's, Newcastle, co. Down	.....	J. Russell, C.E. 16, Waring st. Belfast	do.
Villa, Blackwood, Mon.	G. W. Cooke	T. Rowland Archt. Market-bldgs. Pontypridd	do.
Six Houses, Town-st. Bramley, Leeds	A. Bolland	F. Wilkinson, Archt. 35, Park-square, Leeds	do.
Five Cottages, Hawthorne-avenue, Hull	N. E. Ry. Co.	W. Bell, Archt. York	do.
Twenty-four Houses, Parkwood Springs, Sheffield	..	E. Winder, jun. Archt. Wharf-st. Sheffield	do.
Power House, &c.	Swansea Tramway Co.	Jones & Rowlands, Archt. 58, Wind-st. Swansea	do.
Lodge, Entrance Gates, &c. Newland-lane	Normanton U.D.C.	Surveyor, Council Offices	Feb. 9
Four Shops and Houses, Exmouth	W. J. Sellers	P. Kerley, Archt. Exmouth	do.
Stores, Manningham-lane, Bradford	Prov. Indus. Soc.	Eycroft & Firth, Archt. Bank-bldgs. Bradford	do.
House, James-st. Buckpool, N.B.	.....	J. Perry, Archt. Buckie	do.
Additions to Chapel, Clifton-street, Cardiff	.....	Habershon & Co. Archt. Pearl-st. Cardiff	do.
Church, Tayvallich, N.B.	.....	N. Gillies, Archt. Lochgilphead, N.B.	do.
Board Room, Pleck-road	Walsall Union	H. E. Lavender, Archt Bridge-st. Walsall	do.
Stabling, &c. Bruntcliffe, Leeds	.....	J. Jackson, Archt. Barry-st. Bradford	do.
Granite Setts (1,000 tons)	Hull Corp.	A. E. White, City Engr. Town Hall	Feb. 10
Cattle Lairs, Sumner-street	Blackburn Corp.	W. Stubbs, C.E. Victoria-st. Blackburn	do.
Sewers, &c.	Pudsey U.D.C.	J. Jones, Surv. Council Offices	do.
Additions to Infirmary, Enniskillen	Governors	C. Wilson, The Infirmary, Enniskillen	do.
Villa, Armside, Knott, Kendal	T. Taylor	J. Stalker, Archt. Kendal	do.
House, Stable, &c. Wigton-rd. Carlisle	.....	A. W. Johnston, Archt. 81, Castle-st. Carlisle	do.
Hall and Two Houses, Charles-street Dorchester	Oddfellows Soc	A. L. T. Tilley, Archt. 26, South-st. Dorchester	do.
Road Metal	Wetherby (Yorks.) R.D.C.	Mr. Wiseman, Surveyor, Wetherby	Feb. 11
Street Works	Swindon R.D.C.	H. J. Hamp, Surv. Council Offices	do.
Public Convenience, Grand-parade	Eastbourne Corp.	R. M. Gloyne, C.E. Town Hall	do.
Mortuary Extension	Cardiff Union	E. Seward, Archt. Cardiff	do.
Villa, Northallerton	C. Alexander	W. Perkins, Archt. Bishop Auckland	do.
Farmhouse, Brynn, Cornwall	.....	S. Hill, Archt. Redruth	do.
Rebuilding "Foresters' Arms" Inn, Swindon	T. & J. Arkell	W. Drew, Archt. 22, Victoria-st. Swindon	do.
Road Materials	Blackburn Corp.	W. Stubbs, C.E. Municipal Offices, Blackburn	do.
*Hospital, Liscard	Liscard Cent. Hospital Com.	Hurrell & Taylor, 6, Stanley-st. Liverpool	Feb. 13
*Materials, &c. (various)	Hendon U.D.C.	S. S. Grimley, Public Offices, Hendon, N.W.	do.
Two Roads, Heswall, Cheshire	Land Co. Ltd.	Beloe & Priest, C.E. 13, Harrington-st. Liverpool	do.
Hospital, Liscard, Cheshire	.....	Maxwell & Tuke, Archts. 41, Corporation-st. Manchester	do.
Additions to Public Hall, Lime-st.	Preston Corp.	Borough Surv Town Hall	do.
Paving Works, Ley-st. &c.	Ilford U.D.C.	H. Shaw, C.E. 7, Cranbrook-road, Ilford	do.
Road and Viaduct	Kirkcaldy T.C.	W. D. Sang, C.E. Kirkcaldy, N.B.	do.
*Show Yards	Somt. Cty. Agric. Ass.	A. Cottom, Bridgewater	Feb. 14
*Supplies (various)	Cty. Boro. of West Ham	See Advt.	do.
Church Works, St. George's Church, Leeds	..	H. Walker, Archt. 8 Upper Fountaine-st. Leeds	do.
Sewer Extensions	Barton-on-Irwell R.D.C	C. C. Hooley, C.E. Council Offices	do.
Drainage Works	Cirencester U.D.C.	T. Hibbert, Surv. Cirencester	do.
*Extension of Public Offices	Willesden D.C.	O. C. Robson, Offices, Dyne-rd. Kilburn, N.W.	do.
*Road Making and Paving	do.	do.	do.
*Widening Road	do.	do.	do.
*Works and Materials (various)	do.	do	do.

CONTRACTS—*Continued.*

Nature of Work or Materials.	By whom Required.	Forms of Tender, &c. Supplied by	Tenders to be delivered.
*Road Making (Honor Oak Park)	Lewisham B. of W.	Surveyor's Dept. Town Hall, Catford	Feb 14
*Road Making (Westwood Park)	do.	do.	do.
*Works and Materials (various)	Hammersmith Vestry	See advt.	Feb. 15
*Works and Materials	Hampstead Vestry	Surveyor, Vestry Hall, Hampstead	do.
Granite Kerbs, &c	Birkenhead Corp.	C. Brownridge, C.E. Town Hall	do.
Brick Groyne, Walton-on-Naze	.....	H. W. Gladwell, Surv. 5, Crescent-rd. Walton	do.
Stables, &c. Illingworth, Yorks	Indus. Prov. Soc.	M. Hall, Archt. 29, Northgate, Halifax	do.
Drainage Works	Gorton (Lancs.) U.D.C.	C. J. Lomax, C.E. 37, Cross-st. Manchester	do.
Additions to Home, Huddersfield	..	J. Kirk & Sons, Archt. Huddersfield	Feb. 16
*Erecting Workhouse Buildings	Hastings Union	Jeffery & Skiller, 5, Havelock-road, Hastings	do.
*Electric Lighting, Heating, Hot-water Supply, Laundry Fittings and Kitchen Fittings	Southampton Corp.	Municipal Offices, Southampton	Feb. 17
Street Works	Rexhill (Sussex) U.D.C.	G. Ball, C.E. Town Hall	do.
Additions to Lodge, &c.	Ipswich Burial Board	H. J. Wright, Archt. 4, Museum-st. Ipswich	Feb.
Pier Improvements	Eastbourne Pier Co. Ltd.	M. N. Ridley, C.E. 11, Dartmouth-st. S.W.	do.
Cottage Homes	Stockton Union	J. Rodham, 16, Finkle-st. Stockton-on-Tees	do.
Additions to Museum, Gaol-lane	Dover T.C.	H. R. Stilgoe, C.E. Town Hall	Feb. 21
*Works and Services (various)	Battersea Vestry	J. T. Pidditch, Vestry Hall, Lavender Hill, S.W.	do.
*Foundations for New Central Savings Bank, W. Kensington	Commrs. of H.M. Works, &c	The Sec. Office of Works, Storey's Gate, S.W.	do.
Schools, Knaresborough	Govrs. of King James' Grammar School	Barrowcliffe & Co. Mill-st. Loughborough	Feb. 22
Granite Setts (950 tons)	Clayton-le-Moors U.D.C.	A. Dodgeon, Surv. Council Offices	do.
Additions to Buildings, Sewage Outfall Works	Gorton (Lancs.) U.D.C.	C. J. Lomax, Engr. 37, Cross st. Manchester	do.
Broken Granite (10,000 tons)	Holland (Lincs.) U.C.	H. C. Johnson, Sessions House, Boston	Feb. 23
*Works and Materials (various)	Islington Vestry	Vestry Hall, Upper-st. N.	do.
Three Shops, Fletton	Peterborough Co-op. Soc.	Townsend & Fordham, Archts. Cross-st. Peterborough	Feb. 24
Cottage	Workington Brewery Co. Ltd.	J. Howes, Archt. 23, Curwen-st. Workington	do.
Sewers, &c.	St. Annes-on-Sea U.D.C.	B. Bancroft, C.E. 88, Mosley-st. Manchester	Feb. 25
*Gas Fitters' Work	Commrs. H.M. Works	Office, Storey's Gate, Westminster	do.
*Works and Repairs	do.	do.	do.
Waterworks	Wakefield Corp.	C. C. Smith, C.E. Town Hall	Feb. 28
*Exhibition Buildings	Glasgow International Exhibition	F. A. Healer, 141, Buchanan-st. Glasgow	Mar. 15
*Works and Materials (various)	Westminster Vestry	G. R. W. Wheeler, Town Hall, Caxton-st. S.W.	See advt.
*Painting and Decorating	Trustees Grand Stand, Ascot	W. Menzies, Englefield Green, Surrey	No date
Extension of Weaving Sheds, Earlsheaton, Yorks.	.....	F. W. Ridgway, Archt. Borough-chmbrs. Dewsbury	do.
Twenty-nine Houses, Old Jail, Southampton	.....	W. S. Hill, Surv. Southampton	do.
Primitive Methodist Church, Beatley	.....	Athron & Beck Archt. Dolphin-chambers, Doncaster	do.
Additions to Schools, Ashton-under-Lyne	.....	Burton & Percival, Archt. 150a, Stamford-st. Ashton	do.
Block of Buildings, Auckfield Plain, Durham	.....	T. E. Crossling, Archt. Stanley, Durham	do.
Three Houses, Higham Ferrers	W. Spong	H. Admitt, Archt. High-st. Rushden	do.
Ten Houses, Holbeck, Leeds	T. Cromack	F. W. Rhodes, Archt. Upper Wortley, Leeds	do.
Villa, Odsal, Yorks.	.....	W. H. Sharp, Archt. 239, Rooley-lane, Bradford	do.
Pair Villas, Heysham, nr. Morecambe	.....	Walker & Collinson, Archt. Market-st. Morecambe	do.
Two Houses, Clarendon-rd. West End, Morecambe	J. Porter	Marshall Bros. Archt. Back-crescent, Morecambe	do.
Two Shops and Houses, Halifax-road Dewsbury	.....	F. W. Ridgway, Archt. Dewsbury	do.
Additions to Napier Villa, Fordingbridge, Hants.	W. King	F. Bath, Archt. Salisbury	do.
*Two Shops	.....	Jane, 17, Market-place, Reading	do.

PUBLIC APPOINTMENTS.

Nature of Appointment.	By whom Advertised.	Salary.	Application to be in.
*Clerk of Works	Islington Vestry	4*l.* 4*s.* per week	Feb. 6
*General Foreman	Poplar B. of W.	do.	Feb. 7
*Borough Surveyor	Hemel Hempstead T.C.	150*l.* per annum	do.
*Engineering and Surveying Assistant	Huddersfield Corp.	do.	Feb. 10
*Engineer and Surveyor	Harrow-on-the-Hill U.D.C.	160*l.* rising to 200*l.* per an.	Feb. 13
*Inspector of Nuisances	do.	130*l.* per annum	do.
*Inspector of Roads	Islington Vestry	2*l.* 10*s.* rising to 3*l.* per week	do.
*Foreman (Hardwood Paving)	Hackney Vestry	3*l.* 5*s.* per week	do.
*Building Inspector	Willesden D.C.	150*l.* rising to 200*l.* per an.	Feb. 14
*Building Inspector	Tottenham U.D.C.	150*l.* per annum	Feb. 20
*Superintending Architect	L.C.C.	2,000*l.* per annum	Feb. 25

Those marked with an asterisk (*) are advertised in this Number. *Competitions, p.* iv. *Contracts, pp.* iv. vi. viii. x. & xxi. *Public Appointments, pp.* xix. & xxi.

SOME RECENT SALES OF PROPERTY:

ESTATE EXCHANGE REPORT.

January 7.—By ELWORTHY & SON (at Wisbech).

Wisbech St. Peter, Cambs.—White Hall Farm, 36a. 1r. 10p. £3,180
Four enclosures of pasture, 43a. 3r. 27p., f. .. 3,140

January 18.—By BEARD & SON.

Bayswater.—228, Westbourne-grove, u.t. 45 yrs., g.r. 7*l.* 7*s.*, r. 55*l.* 520

By C. RAWLEY CROSS & Co.

South Kensington.—25, Edith-grove, u.t. 74 yrs., g.r. 7*l.* 10*s.*, e.r. 75*l.* 625
Chelsea.—13a and 14a, Ashburnham-rd., u.t. 79 yrs., g.r. 13*l.*, r. 78*l.* 750
Kensington.—Addison Gardens, f.g.r. 30*l.*, reversion in 98 yrs. 875
Addison Gardens, f.g.r. 10*l.*, reversion in 98 yrs. 290

By FOSTER & CRANFIELD.

Clapham.—13, Richmond-ter., u.t. 29¼ yrs., g.r. 7*l.* 10*s.*, e.r. 50*l.* £310

By W. MARTIN & Co.

Walthamstow.—26, Copeland-rd., u.t. 77 yrs., g.r. 6*l.* 6*s.*, r. 34*l.* 295
Copeland-rd., f.g.r. 12*l.* 12*s.*, reversion in 77 yrs. 335
Dulwich.—177, East Dulwich-rd., u.t. 65 yrs., g.r. 12*l.*, r. 52*l.* 10*s.* 510
18, Elsie-rd., u.t. 73¼ yrs., g.r. 7*l.* 10*s.*, e.r. 36*l.* . 320
110, Melbourne-grove, u.t. 76½ yrs., g.r. 6*l.* 10*s.*, r. 28*l.* 285
10, Ashbourne-grove, u.t. 71 yrs., g.r. 6*l.*, r. 28*l.* 300

January 19.—By DANIEL WATNEY & SONS.

Shadwell.—294 and 296, Cable-st., f., r. 56*l.* 920
1 to 9, 11 to 14, 22, 23, and 24, Albert-st., f. 3,440
Albert-st., f.g.r. 32*l.* 16*s.*, reversion in 4¼ yrs. .. 2,840
High-st., f.g.r. 5*l.*, reversion in 23½ yrs. 155
High-st., two corner building sites, f. £425
Cable-st., &c., f.g.r. 50*l.*, reversion in 64 yrs. .. 1,320

By J. G. DEAN & Co.

Balham.—1, Marius-rd., u.t. 92 yrs., g.r. 10*l.*, r. 52*l.* 530

By H. J. BLISS & SONS.

Walthamstow.—14 and 16, Suffolk Park-rd., f. .. 725
Victoria Park.—67, Strahan-rd., u.t. 51 yrs., g.r. 5*l.* 10*s.*, r. 28*l.* 300
Edmonton.—1, 3, 5, and 7, Exeter-rd., u.t. 83 yrs., g.r. 11*l.* 10*s.* 250
Clapton.—83 and 89, Clifden-rd., f. 835
Hackney.—40 to 52 (even), Boston-st., f. 1,500
Hoxton.—21 to 27 (odd), Hobb's-pl., f. 1,100
Limehouse.—43, 45, and 47, Church-row, c. 400
Wapping.—4 and 6, Red Lion-st., f. 150
Mile End.—44, West-st., f., r. 15*l.* 230
Victoria Pk.—74, Sewardstone-rd., u.t. 58 yrs., g.r. 4*l.* 10*s.* 360

Hackney.—36, Pritchard-rd., u.t. 20 yrs., g.r. 4*l*... £155

By WORSFOLD & HAYWARD (at Dover).

Dover, Kent.—Snargate-st., a bonded vault and yard, u.t. 17 yrs., g.r. 6*l*..... 350
Snargate-st., f.g.r. 18*l*., reversion in 17 yrs. 294
Strond-st., "The Ship Hotel," u.t. 70 yrs., g.r. 4*l*. 6s., r. 80*l*. 1,500
10, Albert-rd., u.t. 66½ yrs., g.r. 2*l*. 10s., r. 24*l*.. 325
12, Woolcomber-lane, f. 240
16, Oswald-rd., f..... 205

By HADDON & TURNBULL (at Hawick).

Minto, Roxburghshire.—The estate of Hassendeanburn, 666 a..... 16,200

January 23.—By F. VARLEY.

Battersea.—Falcon-grove, i.g.r. 19*l*. 2s., u.t. 52 yrs., g.r. nil..... 350
Finsbury Pk.—49, Wyatt-rd., u.t. 71½ yrs., g.r. 5*l*., r. 28*l*..... 310
34 and 36, Ambler-rd., u.t. 63 yrs., g.r. 6*l*., r. 64*l*..... 780

January 24.—By DAVID BURNETT & CO.

Chelsea.—68 and 70, Beaufort-st., u.t. 15 yrs., g.r. 8*l*., r. 50*l*..... 300

By WILLIS & CROUCH.

Kingsland.—34, 35, 36, and 37, Lee-st., ut. 20 yrs., g.r. 12*l*..... 800
Marylebone.—119, Seymour-pl., u.t. 6½ yrs. g.r., 9*l*., r. 55*l*..... 130

By FLEURET, SONS, & ADAMS (at Masons' Hall Tavern).

Hampstead Heath.—North End, "The Old Bull and Bush" p.-h., u.t. 56½ yrs., r. 135*l*., with goodwill 20,200

By J. & W. JOHNSON & CO. (at Masons' Hall Tavern).

Newington Butts.—"The King and Queen" p.-h., u.t. 33 yrs., r. 175*l*., with goodwill 8,900

By JONES, SON, & DAY (at Masons' Hall Tavern).

Victoria Pk.—Hewlett-rd., "The Lord Palmerston" p.-h., u.t. 58 yrs., g.r. 50*l*. 5s., with goodwill 8,100

January 25.—By MANSELL & ROWE.

Norwood.—Anerley-rd., Howard House, u.t., 65 yrs., g.r. 13*l*. 15s., e.r. 75*l*..... 630

By E. W. RICHARDSON & SON.

Mile End.—51, Willow-st., u.t. 31½ yrs , g.r. 5s... 26

By DOUGLAS YOUNG & CO.

Old Kent-rd.—No. 118, f., r. 8o*l*..... 1,600
Clapham.—106, Lansdowne-rd., u.t. 43½ yrs., g.r. 10*l*., e.r. 80*l*. 650
Kennington.—66 and 68, Henry-st., u.t. 9 yrs., g.r. 6*l*. 6s. 160
Teddington.—Verona-villas, f.g.r. 5*l*. 10s., reversion in 81 yrs..... 118

By SWAN WOODCOCK (at Stratford).

Stratford.—25, Gurney-rd., f., e.r. 30*l*. 495

January 26.—By A. ALDRIDGE & CO.

Victoria Pk.—56 to 64 (even), Victoria Park-rd., u.t. 55 yrs., g.r. 4*l*. (lease renewable at 3 per cent. on rack rentals), r. 216*l*..... 2,470
Westminster.—9, Great Peter-st., f.g.r. 81*l*. 5s., reversion in 79 yrs..... 1,970
Margate, Kent.—1 and 2, Second-av., f., r. 240*l*... 3,780

By EVES & SONS.

Enfield.—1, 2, 3, and 4, London-rd., f., r. 230*l*..... 4,575

By C. C. & T. MOORE.

Whitechapel.—74, High-st., f..... 4,500
Commercial-rd. East.—35, Caroline-st., f. 600
St. George's, East.—84, St. George's-st., f., r. 33*l*. 600
Limehouse.—16, Three Colt-st., f..... 515
6 to 16 (even), St. Anne's-row, u.t. 54½ yrs., g.r. 30*l*..... 275
Leytonstone.—270 and 274, High-rd., u.t. 85½ yrs., g.r. 11*l*. 10s., r. 60*l*. 550

By NEWBON, EDWARDS, & SHEPHARD.

Caledonian-rd.—30, 37, 44, and 45, Edward-sq., u.t. 41 yrs., g.r. 20*l*., r. 135*l*. 960
Marylebone.—40, Beaumont-st., u.t. 26 yrs., g.r. 30*l*., r. 90*l*. 825
11, Buckingham-st., u.t. 13 yrs., g.r. 30*l*. 330
Barnsbury.—27 and 28, Offord-st., u.t. 39½ yrs., g.r. 6*l*. 425

By STIMSON & SONS.

Walworth.—70, Villa-st., u.t. 52 yrs., g.r. 11*l*. 15s., r. 52*l*. 420
74, Westmoreland-rd., u.t. 50 yrs., g.r. 6*l*..... 385
161, South-st., u.t. 63 yrs., g.r. 7*l*. 265
Southwark.—39, 40, and 41, Great Suffolk-st., f., r. 96*l*. 6s..... 1,220
Camberwell.—1 and 2, Padfield-st., u.t. 67 yrs., g.r. 9*l*. 505

Battersea.—66, 68, and 70, Shelgate-rd., u.t. 83 yrs., g.r. 21*l*. £855
Tooting.—Burntwood-lane, "Tregadra" and "Tregonhay," u.t. 81 yrs., g.r. 12*l*., r. 64*l*. 525
Wimbledon.—24, Southey-rd., f., r. 36*l*..... 520
Lambeth.—109, Oakley-st., f., e.r. 40*l*. 515
Kennington.—129 and 130a, Prince's-rd., u.t. 10 yrs., g.r. 13*l*. 8s., r. 87*l*. 265
Peckham.—Reynold's-rd., &c., a corner plot of land, f. 220
38 to 72 (even), Cator-st., u.t. 63 yrs., g.r. 66*l*... 4,040
Dulwich.—Dunstan's-rd., four plots of building land, f. 900

January 27.—By E. H. HENRY.

Clapham Common.—28, Orlando-rd., u.t. 71½ yrs., g.r. 9*l*. 10s., e.r. 60*l*..... 540

By J. HIBBARD & SONS.

Hoxton.—39, Felton-st., f., r. 33*l*. 16s. 335
Barnsbury.—115, Offord-rd., f., r. 38*l*. 605
Finchley.—1, Torrington-pl., f., r. 55*l*. 630
Hackney.—200 and 202, Well-st , u t. 46 yrs., g.r. 12*l*., r. 120*l*..... 1,350
Notting Hill.—16, Tobin-st., u.t. 30 yrs., g.r. 3*l*. 10s., r. 40*l*..... 315
29, Tobin-st., u.t. 31 yrs., g.r. 3*l*..... 290
Stoke Newington.—102, Mildmay-rd., u.t. 52½ yrs., g.r. 7*l*., r. 40*l*. 390

Contractions used in these lists.—F.g.r. for freehold ground-rent; l.g.r. for leasehold ground-rent; i.g.r. for improved ground-rent; g.r. for ground-rent; r. for rent; f. for freehold; c. for copyhold; l. for leasehold; e.r. for estimated rental; u.t. for unexpired term; p.a. for per annum; yrs. for years; st. for street; rd. for road; sq. for square; pl. for place; ter. for terrace; cres. for crescent; yd. for yard, &c.

PRICES CURRENT OF MATERIALS.

TIMBER.		
Greenheart, B.G. ton	8/0/0	0/0/0
Teak, E.I....load	10/10/0	15/10/0
Sequoia, U.S.ft.cu.	1/9/0	2/0/0
Ash, Canada, load	3/17/6	5/5/0
Birch, do.....	3/0/0	5/0/0
Elm, do.....	4/12/6	5/15/0
Fir, Dantsic, &c..	2/0/0	4/0/0
Oak, do.....	3/5/0	3/15/0
Canada	4/0/0	6/0/0
Pine, Canada red.	0/0/0	0/0/0
Do. yellow	4/7/6	6/5/0
Lath, Dantsic, fath	4/10/0	5/10/0
St. Petersburg..	4/0/0	6/10/0
Wainscot, Riga, &c., log.....	3/15/0	5/15/0
Odessa, crown....	3/15/0	5/15/0
Deals, Finland 2nd & 1st std. 100 ..	9/15/0	10/5/0
Do. 4th & 3rd..	9/15/0	10/5/0
Do. Riga	8/5/0	9/5/0
St. Petersburg, 1st yellow	11/15/0	14/5/0
Do. 2nd yellow.	10/15/0	12/5/0
Do. white.....	9/15/0	11/15/0
Swedish.....	9/15/0	16/15/0
White Sea	10/15/0	18/0/0
Canada, Pine 1st	18/15/0	25/5/0
Do. do. 2nd ..	13/15/0	17/0/0
Do. do. 3rd, &c.	6/0/0	10/0/0
Do. Spruce, 1st.	8/10/0	10/10/0
Do. do. 3rd and 2nd	7/5/0	8/10/0
New Brunswick	7/5/0	8/0/0
Battens all kinds .	5/0/0	16/0/0
Flooring boards, sq., 1 in., prep. 1st	9/6	16/3
Do. 2nd.....	8/0	13/3
Other qualities—	6/3	7/0
Cedar, Cuba, ft...	/4	/4½
Honduras, &c..	/3¾	/4½
Mahogany, Cuba.	/5¾	/7
St. Domingo, cargo av.	/5	1/3
Mexican, do. do.	/3¾	/4
Tobasco, do. do.	/4	/6¾
Honduras, do...	/4	/6
Box, Turkey, ton.	4/0/0	15/0/0
Rose, Rio.....	7/0/0	14/0/0
Bahia	6/0/0	12/0/0
Satin, St. Doming.	/5	1/0

TIMBER *(continued)*.		
Satin, Porto Rico	0/0/9	0/2/0
Walnut, Italian ..	0/0/3	0/0/7
METALS.		
Iron—Pig, in Scotland .....ton	2/14/5½	0/0/0
Bar, Welsh, in London.....	6/0/0	6/5/0
Do. do. at works in Wales	5/15/0	5/17/6
Do. Staffordshire, in London	6/5/0	7/10/0
COPPER—British cake and ingot	73/15/0	74/5/0
Best selected ..	74/5/0	74/15/0
Sheets, strong..	77/0/0	79/0/0
Chili bars	69/13/9	0/0/0
YELLOW MTL. lb.	7d.	7¼d.
LEAD—Pig Spanish .... ton	15/10/0	0/0/0
English com. Brands	15/15/0	0/0/0
Sheet, English 6 lbs. per sq. ft. and upwards ..	16/15/0	0/0/0
Pipe	17/5/0	0/0/0
ZINC—English sheet.....ton	29/10/0	0/0/0
Vieille Montagne	30/0/0	0/0/0
Spelter	26/2/6	26/7/6
TIN—Straits 111/10/0		0/0/0
Australian.....112/0/0		112/10/0
English Ingots.114/10/0		115/10/0
Banca.....	0/0/0	0/0/0
Billiton	0/0/0	0/0/0
OILS.		
Linseed .....ton	17/10/0	0/0/0
Cocoanut, Cochin	27/15/0	0/0/0
Do. Ceylon	24/10/0	0/0/0
Palm, Lagos.....	21/15/0	0/0/0
Rapeseed, English pale	23/5/0	0/0/0
Do. Brown	21/15/0	22/0/0
Cottonseed ref. ..	15/0/0	16/0/0
Oleine.....	17/0/0	18/0/0
Lubricating U.S.	0/5/3	0/7/6
Do. Black.....	0/5/0	0/6/6
TAR—Stockholm barrel	1/5/0	0/0/0
Archangel.....	0/18/0	0/0/0
Turpentine	32/0/0	32/5/0

TO CORRESPONDENTS.

C. C. H.—J. L.—H. G. S. (Amounts should have been stated).

NOTE.—The responsibility of signed articles, letters, and papers read at public meetings, rests, of course, with the authors.

We cannot undertake to return rejected communications.

Letters or communications (beyond mere news items) which have been duplicated for other journals are NOT DESIRED.

We are compelled to decline pointing out books and giving addresses.

Any commission to a contributor to write an article is given subject to the approval of the article, when written, by the Editor, who retains the right to reject it if unsatisfactory. The receipt by the author of a proof of an article in type does not necessarily imply its acceptance.

All communications regarding literary and artistic matters should be addressed to THE EDITOR; those relating to advertisements and other exclusively business matters should be addressed to THE PUBLISHER, and *not* to the Editor.

TENDERS.

[Communications for insertion under this heading should be addressed to "The Editor," and must reach us *not later than* 10 *a.m. on Thursdays*. N.B.—We cannot publish Tenders unless authenticated by the name and address of the sender; and we cannot publish announcements of Tenders accepted unless the amount of the Tender is given, nor any list in which the lowest Tender is under £100, unless in some exceptional cases and for special reasons.]

BEXHILL-ON-SEA.—For erecting residences and shops at Bexhill-on-Sea :—

Shillitoe & Son	£53,000	F. Brettan	£46,000
Braid, Pater & Co.	49,667	F. G. Newton	43,120

BOLTON.—Accepted for the execution of sewerage works (two contracts) for the Little Hulton Urban District Council. Mr. C. C. Hooley, C.E., Council's Offices, Little Hulton :—

No. 1.

J. & M. Hawley, Stoneclough £2,312 12 1

No. 2.

W. Snape & Sons, Eccles £886 5

BURTON-ON-TRENT.—For the execution of sewerage works, Castle Gresley, for the Repton Rural District Council. Mr. A. Moseley, Surveyor, Ashby-de-la-Zouch :—

C. Davis	£208 8	T. Perkins, Egginton, near Burton*	£200 0 8
H. Simpkin	212 15		
W. Wood	205 0		

* Accepted.

CROYDON.—For additions, &c., to laundry buildings at Infirmary, Mayday-road, Thornton Heath, for the Croydon Guardians. Mr. F. West, architect, 23, Coombe-road, Croydon. Quantities by the architect :—

Marriage & Co.	£690	W. Pearce	£632
F. W. Sedgwick	679	W. Roberts	562
J. Smith & Sons	664	Huntley Bros.*	559
J. M. Card	642	A. P. Maeers	552
W. Smith & Son	640		

* Accepted.

HUDDERSFIELD.—For the erection of twelve houses, Calmlands, for the Meltham Industrial Society, Limited. Mr. J. Berry, architect, 9, Queen-street, Huddersfield :—

Masonry.—James Earnshaw & Sons, Meltham ....
Joinery.—Garlick Bros., Meltham .....
Plumbing.—John W. Kaye, Meltham.....
Plastering and Slating—James Wilkinson & Sons, Meltham ..... } £2,880
Painting.—Joseph Preston & Sons, Meltham .....
Concreting.—John Cooke, Little Royd .....

LEYTON.—For electric wire factory, Leyton. Mr. W. W. Hudson, architect :—

W. Shurmur	£10,475	H. Brown	£9,979
F. & F. H. Higgs	10,285	S. J Scott	9,868
S. Goodall	10,147		

LITTLE ILFORD (Essex).—For the erection of school buildings, &c., Bessborough-road, for the School Board. Mr. S. Jackson, architect, 65, Fenchurch-street, London, E.C. Quantities by Mr. Walter Lawrence, 13, Hart-street, Bloomsbury, W.C. :—

W. J. Maddison	£24,807	Harris & Wardrop	£21,295
Shelbourne & Co.	24,663	W. Shurmur	21,062
G. Sharpe	22,490	Perry & Co.	20,995
F. Britton	22,275	Gregar & Son, Stratford, E.*	£20,336
Chessum & Sons	21,997		

* Provisionally accepted but subject to approval of Education Department.

LONDON.—For pulling down and rebuilding the "British Queen," Old Kent-road :—

W. Shurmur	£2,552	W. Smith	£2,030
W. Rowe	2 253	H. Hood*	1,872
G. Baraer	2 200		

* Accepted.

WOODFORD (Essex).—For making up of Private Streets and Street Improvement Works, for the Woodford Urban District Council, Mr. J. Elliott Smales, Surveyor.

	Trevor Road.	Stoneycroft Road.	Gainsborough Road.	Radley's Lane.	Street Improvement Works.
	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.
Geo. Bell	476 0 0	476 0 0	450 0 0	203 0 0	390 6 0
W. Glenny	459 6 4	428 2 8	442 3 10	195 16 8	..
W. Wadey	345 0 0	327 0 0	368 0 0	180 0 0	321 11 8
Grounds & Newton	315 5 0	315 0 0	320 0 0	150 0 0	248 10 11
Constable & Co.	..	..	..	..	300 6 0
W. & C. French, Woodford	300 0 0*	295 0 0*	298 0 0*	127 0 0*	245 8 7*
Surveyor's Estimate	306 10 8	294 17 7	306 0 0	134 7 0	279 7 0

*Accepted.

AYLESBURY.—For the construction of sewage disposal works, &c., for the Aylesbury Urban District Council (Contracts Nos. 1 to 7). Mr. J. H. Bradford, Engineer and Surveyor to the Council :—

	General Conditions.	Pump, Well, &c.	Precipitating Tank.	Filter Beds.	Irrigation Field.	Buildings.	Chimney Shaft.	Pipes and Valves.	Printing and Lithography.	
	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.
Meredith	466 8 0	3,368 4 1	1,344 15 0	4,144 11 10	2,765 18 9	984 2 7	1,167 0 0	1,015 13 0	50 0 0	15,300 0 0
B. Cooke & Co.	..	2,710 1 5	1,381 1 9	4,528 2 7	2,983 3 9	1,003 11 0	1,100 8 5	1,111 4 6	50 0 0	14,817 13 5
Wilkinson Bros.	..	1,939 17 6	1,128 0 3	4,583 13 5	3,777 10 3	951 2 5	836 2 9	1,178 13 0	50 0 0	14,568 0 0
Wingrove & Stanley	123 3 0	1,772 19 11	1,070 17 7	4,023 8 2	2,721 1 11	954 3 2	943 19 1	1,004 9 0	..	12,806 18 10
Siddons & Freeman	316 0 0	2,623 0 0	1,139 0 0	3,580 0 0	2,451 0 0	914 0 0	910 0 0	1,000 0 0	..	12,617 0 0
G. Bell	..	2,322 0 4	1,156 9 1	3,855 17 6	2,214 18 4	937 1 4	853 8 9	1,250 18 3	..	12,398 2 0
Clift Ford	..	2,216 14 7	1,138 9 0	3,421 8 1	2,574 11 3	1,029 11 11	977 11 9	975 19 2	..	12,334 5 9
Lee & Son	..	1,847 18 9	1,291 3 1	4,277 9 2	2,252 18 5	829 10 5	1,029 2 3	778 0 0	..	12,306 1 1
W. Y. Green & Co.	..	1,913 7 4	1,090 3 8	3,847 6 1	2,491 17 9	938 9 3	926 8 0	995 3 0	50 0 0	12,253 15 1
Mackrill & Son	..	..	..	..	..	..	..	1,063 16 6	..	1,063 16 6
Webster & Cannon	163 10 0	1,696 6 5	1,047 18 0	3,799 9 4	2,451 0 0	844 11 5	914 0 1	922 3 9	50 0 0	11,888 0 0
Batchelor & Snowden	..	..	1,598 10 0	3,371 16 4	2,947 14 6	..	..	990 6 0	..	9,308 6 10
G. H. Gibson	470 0 0	1,329 0 0	1,073 0 0	3,042 0 0	2,430 0 0	810 0 0	905 0 0	875 0 0	50 0 0	10,982 0 0
Merredew & Wort, Stevenage and London*	..	1,528 2 6	989 3 2	3,140 10 11	2,317 0 9	901 5 9	1,004 10 6	935 13 9	..	10,816 2 4

* Accepted conditionally.

LONDON.—For additions and alterations at 22, Stockwell-road, S.E.:—

Malict	£730	G. Barker*	£655
Rice	695		

* Accepted.

LONDON.—Accepted for new bar-front, &c., at the Vine Tavern public-house, Broad-street, Ratcliff, E., for Messrs. Holt & Co. Mr. Fred. A. Ashton, architect, 177, Romford-road, Stratford, E.:—
A. E. Symes £300

LONDON.—For the supply of gas engines, &c., required in connexion with the electric lighting of the Victoria Embankment, for the London County Council:—

J. Taylor & Sons, Ltd.	£3,457	Premier Gas Engine Co., Ltd.	£2,260
Fielding & Platt, Ltd.	2,378	Campbell Gas Engine Co., Ltd.	2,176
Crossley Bros., Ltd.	2,300	J. E. H. Andrews & Co., Ltd.	1,900
Safety Concentric Wiring Co., Ltd.	2,260		

LONDON.—For the supply of dynamos, &c., required in connexion with the electric lighting of the Victoria embankment, for the London County Council:—

Electrical Co., Ltd.	£6,877 0	Crompton & Co., Ltd.	£4,949 0
Safety Concentric Wiring Co., Ltd.	5,625 0	Mather & Platt, Ltd.	4,000 0
Electric Construction Co. Ltd.	5,535 0	McClure & Whitfield	3,729 5

LONDON.—For building stabling and offices, Wicklow-street, Grays Inn-road, for Messrs. Willing & Co., Limited. Messrs. W. S. Cross & Kekwick, architects, 18, Outer Temple, Strand. Quantities supplied:—

McCormick & Sons	£4,999	Patman & Fotheringham	£4,533
Love & Co.	4,700	H. Wall & Co.	4,514
J. Jarvis & Sons	4,644	J. Carmichael	4,497
Chessum & Sons	4,575	T. G. Sharpington	4,450
George Neal	4,538	Dearing & Son*	4,433

* Accepted.

LONDON.—For rebuilding Bishop's-court, E.C. Messrs. Alder & Turrill, architects:—

Ashby & Horner	£5,138	W. Shurmur	£4,300
J. Bentley	4,785	Patman & Fotheringham	3,983
E. Lovatt	4,600		

LONDON.—For re-building "Feathers" Restaurant, Great Chapel-street, Westminster. Messrs. Shoebridge & Rising, architects:—

		Extra for Bath stone.
Leslie & Co., Limited	£10,877	£227
F. Mark	10,847	—
Adamson & Son	10,759	163
Ashby & Horner	10,750	305
Kilby & Gayford	10,726	295
J. Carmichal	10,675	290
W. Shurmur	10,650	300
C. Dearing & Son	10,435	300
Lascelles & Co.	10,300	295
Auley & Son	10,080	158
Edwards & Medway	9,997	147

LONDON.—For alterations and additions to the "Woodberry Hotel," South Tottenham. Messrs. Eedle & Meyers, architects:—

Beer & Gash	£6,850	J. Auley & Son	£5,790
S. Goodall	6,293	W. H. Lascelles & Co.	5,785
F. Valler	6,051	Dearing & Son	5,735
W. Shurmur	5,997	Edwards & Medway	5,677
Patman and Fotheringham	5,928		

LONDON.—For erection of factory at Stour-road, Old Ford. Messrs. Mark W. King & Sons, architects:—

E. Lawrence & Son	£13,335	Cubitt & Co.	£12,481
J. Chessum & Son	12,899	W. Shurmur	12,220
H. L. Holloway	12,743	J. Grover & Son	11,938
Perry & Co.	12,670	Patman & Fotheringham	11,891
Ashby & Horner	12,572		

LONDONDERRY.—For the erection of shops, stores, &c., John-street and Foyle-road. Mr. R. H. M'Elwee, architect, 9, Carlisle-road, Londonderry:—
Jas. Fulton, Fountain-street £1,275

MORLEY (Yorks).—For additions to Cross Hall schools, Fountain-street, Morley, for the School Board. Messrs. Buttery & Birds, architects, Morley. Quantities by architects:—

Masonry.—J. & J. Sugden, Morley	£509	2
Joinery.—J. Clegg & Sons, Morley	300	0
Plumbing.—Arthur Fawcett, Morley	130	0
Plastering.—E. Wilson, Morley	57	10
Slating.—John Atkinson & Son, Leeds	99	10
Painting.—C. Habergham, Morley	26	0

ST. ANDREW'S (N.B.).—For the construction of a storage reservoir, for the Water Commissioners. Messrs. Beltrage & Carfrae, C.E., 1, Erskine-place, Edinburgh:—

J. Kirk	£12,723 8 11	J. Kirkcaldy	£9,960 5 0
Adam & Co.	12,684 0 0	J. & C. Hay	9,927 0 0
T. Munro	12,522 2 5	R. C. Brebner & Co.	9,452 0 0
W. G. Flett	12,047 12 1	R. Marshall	9,029 3 6
J. Martin	11,906 15 1	J. Augus	8,805 9 4
A. Brunton & Son	11,831 16 0	G. Mackay & Son, Broughty Ferry	8,514 9 3
A. Fraser, jun.	11,243 18 7		
G. Dick, jun.	10,795 0 0		
Kennedy	10,112 13 1		

* Accepted.

SHEFFIELD.—For alterations to the "Bull's Head" inn, Dunstreet, Sheffield, for the Directors of the Old Albion Brewery, Limited, Sheffield. Messrs. Hall & Fenton, architects, 14, St. James's-row, Sheffield. Quantities by the architects:—

T. Franklin	£802 4	N. Hancock	£732 0
J. & H. Wheen	790 0	Bee & Son	724 0
Thomas Roper	789 0	Abey & Son	722 18
Martin & Hughes	755 0	A. Turner	691 0
H. Laidler	733 0	B. Powell, 36, Wath-road*	685 10

* Accepted.

SHEFFIELD.—For the construction of roads, &c., Banner Cross Estate, for Mr. W. H. Greaves, Bagshawe. Mr. J. D. Townend, surveyor, Independent Buildings, Fargate, Sheffield:—

G. Webster	£2,128 0 0	B. Roberts	£1,276 14 10
B. Powell	1,950 0 0	G. Eyre	1,151 16 3
J. E. Nadin	1,324 16 10	F. Eyre, Hillsborough*	1,150 17 9

* Accepted.

TONBRIDGE.—For proposed boiler, chimney-shaft, and flues at the Tonbridge Union Workhouse, for the Tonbridge Board of Guardians. Mr. H. C. Lander, architect, Effingham House, Arundel-street, Strand, W.C. Quantities by Mr. C. A. Jaques, 29, Dartmouth Park-avenue, N.W.:—

W. Neil & Co.	£720 13 3	K. C. Jarvis, Tonbridge (accepted)	£500 0 0
Strange & Sons	600 0 0	Myles & Warner	499 10 0
Cross & Co.	591 4 3		

WATFORD.—For the execution of street works, for the Urban District Council. Mr. D. Waterhouse, Engineer, 14, High-street, Watford:—
F. Dupont £1,375 18 9

The Surveyors' Districts Map
— OF THE —
County of London

(Supplement to the NEW YEAR'S NUMBER), can be
MOUNTED ON CLOTH,
If sent to the Publishing Office, at the following PREPAID rates, viz.:—

ON STRAINER (Varnished)	5/-
ON ROLLERS do.	3/6
FOLDED, in Case (Unvarnished)	2/6

N.B.—A remittance MUST accompany every Map sent in for mounting.

THE NEW YEAR'S NUMBER
Is OUT OF PRINT.
Reprints of the Map (unmounted) are on sale,
PRICE ONE SHILLING.
Office:—46, CATHERINE STREET, LONDON, W.C.

J. J. ETRIDGE, Jr.
SLATE MERCHANT,
SLATER and TILER.
ESTIMATES GIVEN FOR
SLATING AND TILING,
To be executed by Contract in any part of ENGLAND.
Penrhyn - Bangor,
Oakeley - Portmadoc,
And other description of Slates Ready for immediate delivery to any Railway Station.
Applications for Prices, &c., to
BETHNAL GREEN SLATE WORKS,
BETHNAL GREEN, LONDON, E.

C. B. N. SNEWIN
MAHOGANY, WAINSCOT, WALNUT,
TEAK, VENEER, and TIMBER MERCHANT,
Nos. 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, & 17, BACK HILL, HATTON GARDEN, and 29, RAY STREET, FARRINGDON ROAD, E.C.
THE LARGEST STOCK OF ALL KINDS OF WOODS IN EVERY THICKNESS. DRY, AND FIT FOR IMMEDIATE USE.
Telephone, No. 274 Holborn. Tele. Address "SNEWIN: London."

TERMS OF SUBSCRIPTION.

"THE BUILDER" (Published Weekly) is supplied DIRECT from the Office to residents in any part of the United Kingdom, at the rate of 19s. per annum (52 numbers) PREPAID. To all parts of Europe, America, Australia, New Zealand, India, China, Ceylon, &c., 26s. per annum. Remittances (payable to DOUGLAS FOURDRINIER) should be addressed to the publisher of "THE BUILDER," No. 46, Catherine-street, W.C.

SUBSCRIBERS in LONDON and the SUBURBS, by prepaying at the Publishing Office, 19s. per annum (52 numbers) or 4s. 9d. per quarter (13 numbers), can ensure receiving "The Builder," by *Friday Morning's Post.*

THE BATH STONE FIRMS, Ltd.
BATH.
FOR ALL THE PROVED KINDS OF
BATH STONE.
FLUATE, for Hardening, Waterproofing, and Preserving Building Materials.

HAM HILL STONE.
DOULTING STONE.
The Ham Hill and Doulting Stone Co.
(incorporating The Ham Hill Stone Co. and C. Trask & Son, The Doulting Stone Co.)
Chief Office:—Norton, Stoke-under-Ham, Somerset.
London Agent:—Mr. E. A. Williams, 16, Craven-street, Strand.

Asphalte.—The Seyssel and Metallic Lava Asphalte Company (Mr. H. Glenn), Office, 42, Poultry, E.C.—The best and cheapest materials for damp courses, railway arches, warehouse floors, flat roofs, stables, cow-sheds and milk-rooms, granaries, tun-rooms, and terraces. Asphalte Contractors to the Forth Bridge Co. [ADVT.

SPRAGUE & CO.'S, Ltd.,
INK-PHOTO PROCESS,
4 & 5, East Harding-street,
Fetter-Lane, E.C. [ADVT.

QUANTITIES, &c., LITHOGRAPHED accurately and with despatch.
METCHIM & SON { 8, PRINCES STREET, ST. GEORGE ST. WESTMINSTER
"QUANTITY SURVEYORS' DIARY AND TABLES," For 1899, price 6d., post 7d. In leather 1/- Post 1/1 [ADVT.

ASPHALTE
For Horizontal & Vertical Damp Courses.
For Flat Roofs, Basements, & other Floors.
Special attention is given to the above by
THE
French Asphalte Co.
Contractors to
H.M. Office of Works, The School Board for London, &c
For estimates, quotations, and all information, apply at the Offices of the Company,
5, LAURENCE POUNTNEY HILL,
CANNON STREET, E.C.

TWELVE GOLD AND SILVER MEDALS AWARDED.
COPPER AND ZINC ROOFING.
F. BRABY & CO.

LONDON.	LIVERPOOL.	GLASGOW.	BRISTOL.
352 to 364, Euston-rd., N.W.	6 & 8, Hatton Garden.	47 & 49, St. Enoch-square.	Ashton Gate Works, Coronation-rd

VIEILLE MONTAGNE SOLE MANUFACTURING AGENTS.
NO SOLDER. NO EXTERNAL FASTENINGS.
Particulars on Application. Chief Offices: Fitzroy Works, EUSTON ROAD, LONDON, N.W.

Clark, Bunnett, & Co. LIMITED,

ENGINEERS AND FOUNDERS.

Contractors to the War Office, H.M. Office of Works, Lord Chamberlain's Department.

HYDRAULIC LIFTS and CRANES. STEAM LIFTS. STEAM ENGINES.

HAND-POWER LIFTS, CRABS AND JIBS, IRON BUILDINGS, ROOFS, STAIRCASES, &c.

FORCE AND LIFT PUMPS, CASTINGS IN IRON, BRASS, & BRONZE. *Every Description of Builders' Castings.*

London: 22, QUEEN STREET, CHEAPSIDE, E.C. *(Late 30, King Street and Rathbone Place, W.)* **Works: New Cross, S.E.**
And at Paris, New York, Liverpool, Manchester, and Birmingham. *Telephone—No. 120, Deptford.*

MAW & Co.

BENTHALL WORKS, JACKFIELD, SHROPSHIRE.

TILES

PLAIN AND ORNAMENTAL, for WALLS, HEARTHS, FLOORS &c. EMBOSSED, GLAZED, PRINTED, PAINTED, MOSAIC & ENCAUSTIC.

MAJOLICA

MOSAIC & C.

WHOLESALE AGENTS: MESSRS. W. B. SIMPSON & SONS, 97 & 99, ST. MARTIN'S LANE, LONDON, W.C.

MAHOGANY, WAINSCOT, TEAK, WALNUT,
Deal and General Timber Merchants.
SEASONED STOCKS IN ALL THICKNESSES.

W. & J. R. HUNTER,

Government and Railway Contractors.

NEW BETHNAL GREEN ROAD
(Opposite G.E.R. Goods Station),
VENEER MERCHANTS.
Telephone No. 2,476.
Telegraphic Address, "SEQUOIA."

ORNAMENTAL CEILINGS AND CORNICES

GOLD MEDAL, PARIS, 1878.
JUROR, CLASS XXX., INTERNATIONAL EXHIBITION, 1862.
JUROR, CLASS XXVI., GREAT EXHIBITION, 1851.

IN PATENT FIBROUS PLASTER.
In slabs, dry, and ready for fixing.

George Jackson & Sons,

No. 49, RATHBONE PLACE, LONDON, W.
ESTABLISHED 1780.
All kinds of Enrichments supplied in the same material.

PRIZE MEDAL CLASS XV., EXPOSITION UNIVERSELLE, 1867.
PRIZE MEDAL, CLASS X. (o), INTERNATIONAL EXHIBITION, 1862.
PRIZE MEDAL, CLASS XXIV., EXPOSITION UNIVERSELLE, 1855.

GEARY, WALKER & Co

PARQUET MOSAIC & WOOD-BLOCK FLOORS

11, QUEEN VICTORIA STREET, LONDON. E.C.

DENNETT FIREPROOF FLOORS, &c.

CONSTRUCTIVE IRONWORK OF ALL DESCRIPTIONS.

DESIGNS AND ESTIMATES SUPPLIED TO ARCHITECTS.

FIREPROOF ENCASEMENT OF IRONWORK, CONCRETE STAIRS, PAVING, &c.

Apply to DENNETT & INGLE, No. 24, QUEEN ANNE'S GATE (late 5, WHITEHALL), LONDON, S.W.

SPECIAL ADVANTAGES TO PRIVATE INSURERS.
THE IMPERIAL Insurance Company, Limited. FIRE. (Est. 1803), 1, Old Broad-street, E.C. and 22 Pall Mall, S.W.
Subscribed Capital, 1,200,000*l.* Paid-up, 300,000*l.* Total Funds, over 1,500,000*l.*—E. COZENS SMITH, General Manager.

PHŒNIX FIRE OFFICE,
19, LOMBARD STREET,
AND
57, CHARING CROSS, LONDON.
ESTABLISHED 1781.
LOWEST CURRENT RATES.
LIBERAL AND PROMPT SETTLEMENTS.
ASSURED FREE OF ALL LIABILITY.
ELECTRIC LIGHTING RULES SUPPLIED.
W. C. MACDONALD } Joint
F. B. MACDONALD } Secretaries.

THE VULCAN
BOILER AND GENERAL
INSURANCE CO.,
LIMITED.
(Late The Boiler Insurance and Steam Power Co., Lim. The Original Boiler Insurance Company.)
Head Office: 67, King Street, Manchester.
ESTABLISHED 1859.
Subscribed Capital - - £375,000.
Boilers and Engines Insured and Inspected.
Rates quoted to meet the
WORKMEN'S COMPENSATION ACT,
Employer's Liability Act, and Common Law.
Individual Accident Insurance.
Upwards of 40,000 *Boilers & Engines under supervision.*
J. F. L. CROSLAND, M.Inst.C.E., M.Inst.M.E., Chief Engineer.
EDWARD HADFIELD, Secretary.
Application for Agencies Invited.

"The Builder" Student's Series.
Crown 8vo, 3s. 6d. post free.
SPECIFICATIONS FOR BUILDING WORKS, AND HOW TO WRITE THEM: a Manual for Architectural Students. By FREDERIC RICHARD FARROW, F.R.I.B.A.
The Chapter on Terra-Cotta by THOS. COOPER, A.R.I.B.A. and that on Electric Wiring, by ALEX. RUSSELL, M.A. (Cantab.), Lecturer to Faraday House, and NEVILLE T. PAYNE, A.I.E.E.
This Manual is written with a view to meet the requirements of the student, to show him how he should write a specification, so that when he has learnt the method and general principles, he may apply them to the particular exigencies of any building he may desire.
"Every architect who takes pupils should insist that they obtain copies."—*Architect.*
"Will prove of service to the architectural student."—*Building News.*
"Full of practical hints and advice—has a good index."—*A. A. Notes.*
"Well fulfils a useful purpose."—*Glasgow Herald.*
"A handy manual—will be found extremely useful in the early days of student life."—*Liverpool Courier.*
Uniform with the above, 5s. post free.
CARPENTRY AND JOINERY: a Text-Book for Architects, Engineers, Surveyors, and Craftsmen (with over 420 illustrations), by BANISTER F. FLETCHER, A.R.I.B.A. and H. PHILLIPS FLETCHER, A.R.I.B.A., A.M.I.C.E.
The Authors have endeavoured to meet the requirements of the craftsman, and at the same time to produce a work that will be useful to the Professional man in the designing of the various structures. They have also endeavoured to consider the desires of those who are likely to become candidates for the examination of the City and Guilds Institute, the Carpenters' Company, and the Institute of Certified Carpenters, &c. Also for the examination in these subjects by the R.I.B.A. and the Surveyors' Institution, &c.
"Can be heartily recommended."—*A. A. Notes.*
"A concise treatise."—*Scientific American.*
"Admirably adapted for its intended purpose."—*Carpenter and Builder.*
"A very useful volume."—*English Mechanic.*
"Thoroughly practical and up-to-date."—*Irish Builder.*
"Of the utmost value to the student."—*City Press.*
London:
D. FOURDRINIER, "Builder" Office, 46, Catharine-street, W.C.

RAGGETT'S SINGLE-FRONTED RESIDENCES. 25 Coloured Plates, half imperial size, plates only, 25s. with folio 28s. 6d. bound in book, 30s.
The above work consists of a complete variety of plans, all worked out on an equal basis, with quantities for ascertaining which is the cheapest. Sent on approval if desired.
J. J. RAGGETT, 88, Colmore-row, Birmingham.

BILLS OF QUANTITIES, &c.
LITHOGRAPHED CORRECTLY BY RETURN OF POST. A LIBERAL DISCOUNT OFF USUAL PRICES.
PLANS BEST STYLE.
J. L. ALLDAY,
Shakespeare Press, Birmingham.

THE ARCHITECTURE OF OUR LARGE PROVINCIAL TOWNS.
"THE BUILDER" SERIES.
1896.
1. Liverpool ..Sep. 26 | 2. Manchester Nov. 7 | 3. Leeds.....Dec. 19
1897.
4. Bristol ....Jan. 30 | 7. Leicester ..June 5 | 10. Sheffield .. Oct. 9
5. Cardiff .....Mar.13 | 8. Derby ....July 17 | 11. Birmingham Nov27
6. Northampton Apl24 | 9. Nottingham Aug28
1898.
*12. Edinburgh Jan.1 | *15. Aberdeen May 14 | 18. Nwcstle-on-T. Oct8
13. Bradford..Feb.19 | 16. Glasgow.. July 9 | 19. Belfast.... Nov.19
14. Hull .....Apl. 2 | 17. Dundee ..Aug. 13
1899.
*20. Dublin (the last of the series) Jan. 7.
*Nos. 12 (Edinburgh), 15 (Aberdeen), and 20 (Dublin) are *out of print*
Post-free FOURPENCE-HALFPENNY each.
London: The Publisher of "THE BUILDER," 46, Catherine-street, W.C.

THE ABBEYS OF GREAT BRITAIN.
In each case—VIEW, specially drawn for this series. GROUND PLAN, to a large scale, shaded to indicate the date and style of the several parts; DESCRIPTIVE ARTICLE, &c.
1894.
1. Westminster .. .. .. JAN.
2. Rievaulx .. .. .. JULY.
3. Glastonbury .. .. .. AUG.
4. Croyland .. .. .. SEPT.
5. Whitby .. .. .. OCT.
6. Bath .. .. .. NOV.
7. Tewkesbury .. .. .. DEC.
1895.
8. Fountains .. .. .. JAN.
9. Tynemouth .. .. .. FEB.
10. Malmesbury .. .. MARCH.
11. Netley .. .. .. APRIL.
12. Bolton .. .. .. MAY.
13. Lindisfarne .. .. ..JUNE.
14. Furness .. ..JULY.
15. Romsey .. .. OCT.
1896.
16. Kirkstall .. .. .. JAN.
17. Abbey Dore .. .. APRIL.
18. Selby .. ..JULY.
19. Byland .. .. .. OCT.
1897.
20. Great Malvern .. .. JAN.
21. Sherborne .. .. APRIL
22. Bayham .. .. JULY
23. Pershore .. (out of print).
1898.
24. Melrose. .. ..(out of print).
25. Waltham .. .. .. APRIL.
26. Tintern .. ..JULY.
27. Lanercost .. .. .. OCT.
1899.
28. Llanthony .. (out of print)
29. Hexham.. .. .. APRIL
30. Vaile Crucis.. .. .. JULY
31. Cartmel .. .. OCT.
Post-free FOURPENCE-HALFPENNY each.

THE REREDOS, ST. PAUL'S
(15in. by 11¼in.), on stout paper, for framing, 6d.; by post, 8d.
PORTFOLIOS
for Preserving the Plates unfolded, 2s. 6d.; by post, 3s.
London; The Publisher of "THE BUILDER," 46, Catherine-street, W.C.

THE SANITARY INSTITUTE.
LECTURES AND DEMONSTRATIONS FOR SANITARY OFFICERS.
The TWENTY-SEVENTH COURSE of LECTURES will be held at THE PARKES MUSEUM, Margaret-street, W. on MONDAYS and THURSDAYS, commencing FEBRUARY 20th.
The Course includes in addition to the Lectures a number of practical Demonstrations and Inspections at places illustrative of sanitary practice and administration.
Full particulars can be obtained at the Offices of the Institute, Margaret-street, W.

THE WORSHIPFUL COMPANY OF CARPENTERS.
The Next of the Series of FREE LECTURES on matters connected with BUILDING, will be delivered at CARPENTERS' HALL, London Wall, on MONDAY next, FEBRUARY 6th, at EIGHT p.m. by Professor BANISTER FLETCHER, F.R.I.B.A. Subject: "ORNAMENT," with Lantern Illustrations. Chairman: His Eminence CARDINAL VAUGHAN. — Admission Free, by Ticket to be obtained from S. W. PRESTON, Esq. at the Hall.

ROYAL INDIAN ENGINEERING COLLEGE, Coopers Hill, Staines.—The COURSE OF STUDY is arranged to fit an Engineer for employment in Europe, India, and the Colonies. About 40 Students will be admitted in September, 1899. The Secretary of State will offer them for Competition twelve appointments as Assistant Engineers in the Public Works Department, and three appointments as Assistant Superintendents in the Telegraphs Department, one in the Accounts Branch P.W.D. and one in the Traffic Department, Indian State Railway.—For particulars, apply to SECRETARY, at College.

SURVEYORS INSTITUTION EXAMINATIONS.—Complete courses of preparation in class or by correspondence in all divisions and sub-divisions. At the last four examinations the following prizes were obtained by Mr. PARRY'S pupils:—1895 and 1896, Institution Prize, Driver Prize, and Penfold Silver Medal; 1897, Institution Prize and Special Prize; 1898, Institution Prize, Special Prize, Driver Prize, and Penfold Silver Medal, and Crawter Prize (one of the two bracketted winners of the last). At the Examination of last March MORE THAN HALF of the successful list were Mr. PARRY'S pupils.—Apply to Mr. RICHARD PARRY, F.S.I. A.M.I.C.E. &c. 27, Great George-street, Westminster (immediately opposite the Surveyors' Institution).

SANITARY INSPECTORS' and PRACTICAL SANITARY SCIENCE EXAMS. of THE SANITARY INSTITUTE. Complete Courses of Instruction by correspondence for these and similar exams. conducted by Gentleman (Engineer, Surveyor, and Sanitary Inspector to Urban District Council) holding three Certificates from San. Inst. 1st Class Honours Medallist, Hygiene, &c. Several hundred successes. Classes for 1899 EXAMS. just commencing.—Apply early for Syllabus of Subjects, &c. to MEM. SAN. INST. Box 195, Office of "The Builder."

SANITARY INSPECTORS. — EXAMINATIONS for qualification under the SANITARY INSTITUTE. A Qualified Surveyor, and holder of certificates of competency in sanitary knowledge and building construction, is prepared to COACH ladies and gentlemen for these Exams. by correspondence. Fees entirely conditional on the pupil's success payable after passing, bar a nominal guarantee of good faith. 75 per cent of my students were successful at last Exam.—GEO. B. DAFFORN, P.A.S.I. 25, High-street, Wimbledon.

SANITARY INSTITUTE EXAMS.—Preparation for the Inspectors' Examination under a system of correspondence needing no Text Books or Acts, by C. H. CLARKE, Assoc San.Inst. Member of the Société Française d'Hygiène. 1st Honourman and Medallist in Hygiene, Member of the Society of Arts, Professional Lecturer on Sanitation. Clarke's methodical and reliable "Aids":—"Notes on Sanitary Law," 1s. 6d. "Sanitary Appliances" (diagrams), 1s. "Trade Nuisances," 6d. "Practical Drain Inspection," 6d. "Calculation of Cubic Space," 1s.—Prospectus from 120, Thorold-road, Ilford, E.

MUNICIPAL and COUNTY ENGINEERS' EXAMINATION.—Mr. RICHARD PARRY, A.M.I.C.E. F.S.I. &c. 27, Great George-street, Westminster, prepares pupils by correspondence for this examination. The course of work may be taken to extend over three, six, or twelve months according to previous knowledge. At the examination of last April out of the 15 successful candidates 12 were prepared by Mr. Parry.

R.I.B.A. EXAMS. — PREPARATION personally or by correspondence, in three, six, nine, or twelve months' courses. ARCHITECTURAL LENDING LIBRARY. Special three months' finishing courses.—For full particulars apply to Messrs. HOWGATE & BOND, Associates R.I.B.A. Perchard House, 70, Gower-street, W.C. (close to the British Museum).

ASSISTANT SURVEYORS and ENGINEERS, ADMIRALTY.—Preparation by correspondence personally, or in residence, for Examinations now announced Recent successes. Preparation also for R.I.B.A. and S.A. Exams.—MIDDLETON & CARDEN, 19, Craven-street, W.C

SANITARY INSPECTORS' EXAMS.—Candidates for exams. of Sanitary Institute prepared by correspondence by a Member of the Sanitary Institute. Classes for 1899 exams just commencing. Many recent successes. Thorough training given.—For particulars, testimonials, &c. address, Box 209, Office of "The Builder."

GIRDERS, Columns, Roofs, and Floors Designed and Inspected during construction and erection. Plans copied and traced.
JENNER G. MARSHALL, Assoc.M.Inst.C.E. M.I.M.E. Consulting Engineer,
NORWICH UNION CHAMBERS, BIRMINGHAM.

W. F. HARBER, Architect, aids others with complete and COMPETENT ASSISTANCE at No. 35 CRAVEN-STREET, CHARING CROSS.

THE CEMENT USERS' TESTING ASSOCIATION.
Apply for terms to the Secretary,
EDMUND S. SPENCER, B.Sc. 136, Shaftesbury-avenue, London, W.
Northern Office: 22, Cooper-street, Manchester.

YOUNG ARCHITECT (A.R.I.B.A.) ASSISTS in the PREPARATION of DRAWINGS, TRACINGS, &c. at his own office.
G. SCORER,
No. 28, Newman-street, W.

TO ARCHITECTS. — QUANTITIES.—Quantity Surveyor, of large and varied experience, PREPARES QUANTITIES, ADJUSTS E. and O. ACCOUNTS, &c. Mutual terms, full responsibility taken, own office. Testimonials and references to clients.—Address, Q. S. 15, Montholme-road, Wandsworth Common, S.W.

ARCHITECT and SURVEYOR of many years' experience, with office in Westminster, undertakes the PREPARATION of PLANS, specifications, quantities, Dilapidations, &c. for all kinds of Building Work on moderate terms.—Box 110, Office of "The Builder."

GENTLEMAN, capable in all details of an Architect and Surveyor's practice, twenty-three years' experience with leading firms, qualified, desires to Assist in or take full conduct, correspondence, &c of a practice at a salary, and with view to future advancement.—State salary given, Box 147, Office of "The Builder."

PARTNERSHIP REQUIRED in Lead, Colour, and Varnish Business by commercial man with extensive and sound connexion amongst consumers. Please state fully all necessary particulars. No agents.—Box 106, Office of "The Builder."

PARTNERSHIP REQUIRED by young Gentleman (34), moderate capital, having practical knowledge of the building trade, including estimating, plans, and office routine.—Address, Box 148, Office of "The Builder."

PARTNERSHIP.—An A.R.I.B.A. (fully qualified in every respect, at present acting as Managing Assistant to a London office) desires similar Position with view to partnership. London or provinces.—Box 242, Office of "The Builder."

ASYLUMS and HOSPITALS.—The advertiser has had 12 years' experience in planning and work connected with the above, and obtained second premium in two recent asylum competitions. He is desirous of obtaining a situation with an Architect having this class of practice, with a view to partnership.—Box 111, Office of "The Builder."

TO BUILDERS.—Wanted, PARTNER, to take place of one retiring. Business established in London over twenty-five years. Full investigation offered to principals with 1,500*l.* to 2,000*l.* available.—Apply, CAMERON, 20, Finsbury-circus, E.C.

CABINET MAKERS. — Old-established firm are desirous of LETTING OFF PORTION of their WORKS, with latest machinery, to a capable man, able to undertake and carry out portion of their work as sub-contractor.—Address, Y. 2, "The Yorkshire Post," Leeds.

DRAWINGS WANTED (first-class) for illustrating Horticultural and Iron Building Catalogue.—Address giving particulars, Box 112, Office of "The Builder."

PHOTO-LITHO. SPRAGUE & Co LTD 4 & 5, EAST HARDING STREET, FETTER LANE, E.C.

THE PRINCESS OF WALES THEATRE, KENNINGTON.—Mr. W. G. R. Sprague, Architect.

PHOTO-LITHO SPRAGUE & Co LTD 4 & 5, EAST HARDING STREET, FETTER LANE, E.C.

THE PRINCESS OF WALES THEATRE, KENNINGTON.—Mr. W. G. R. Sprague, Architect.

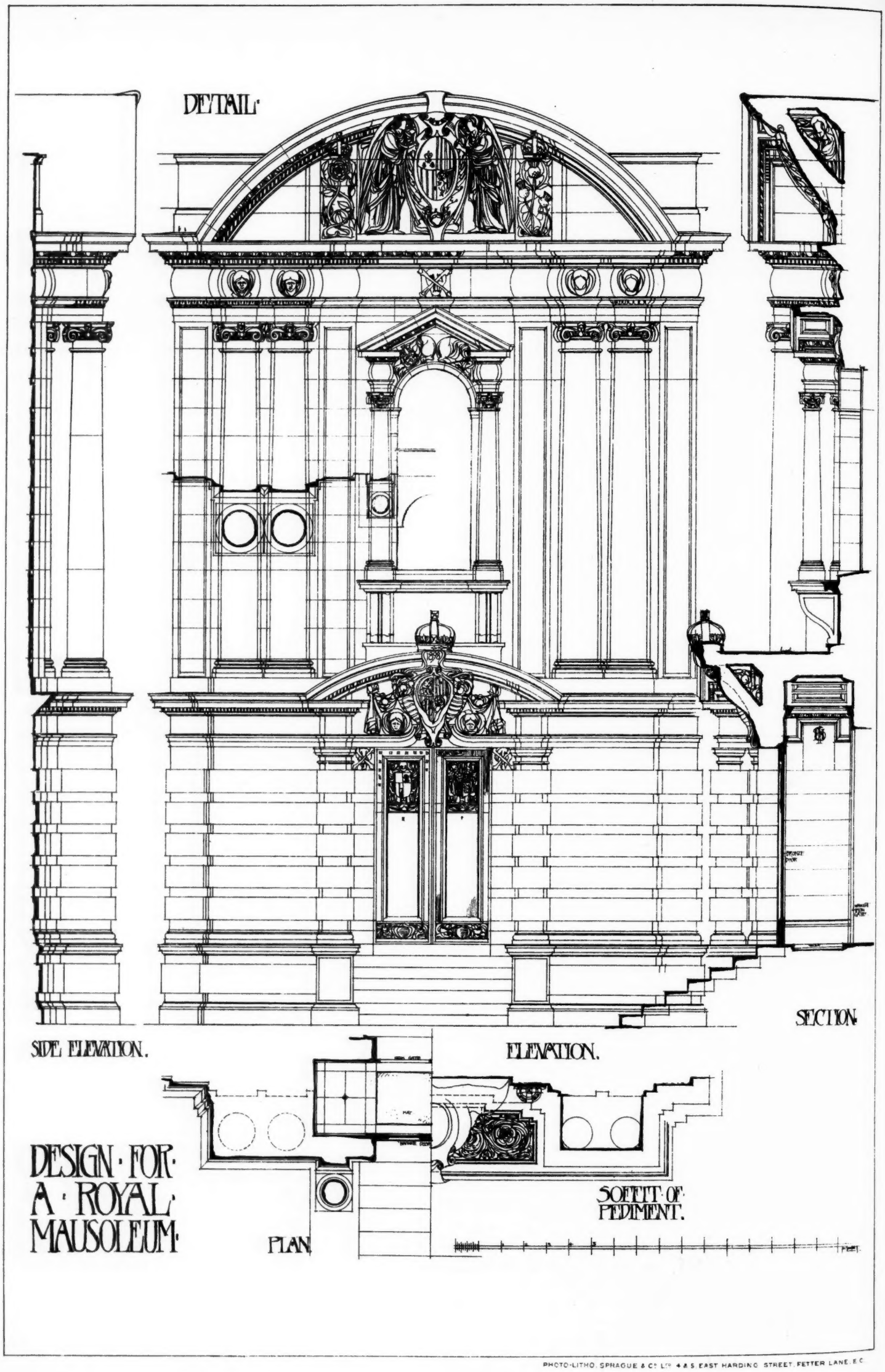
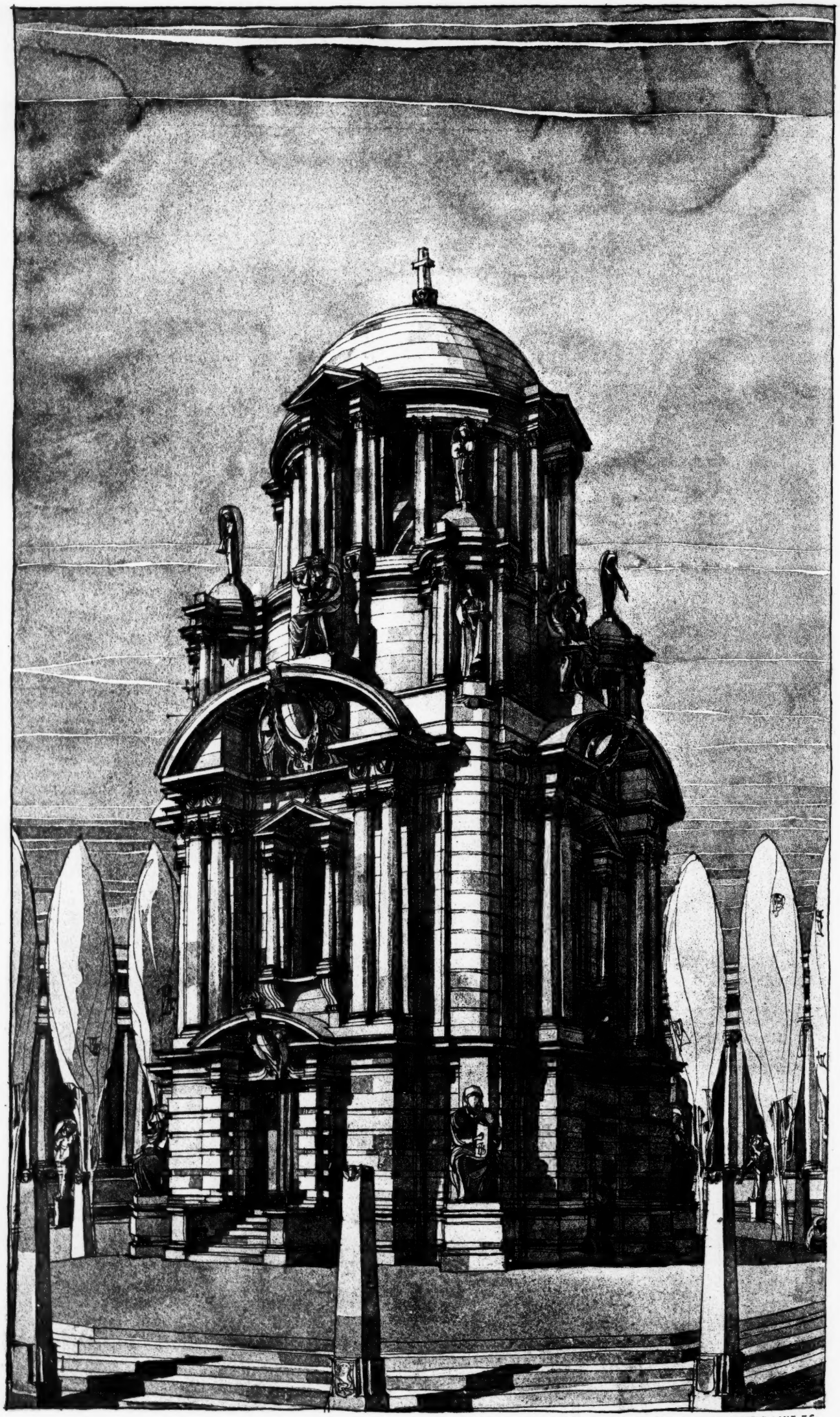


PHOTO-LITHO. SPRAGUE & Co Ltd 4 & 5 EAST HARDING STREET, FETTER LANE, E.C.

Tite Prize, R.I.B.A., 1899.

DETAIL ELEVATION.

DESIGN FOR A ROYAL MAUSOLEUM.—By Mr. Jas. B Fulton



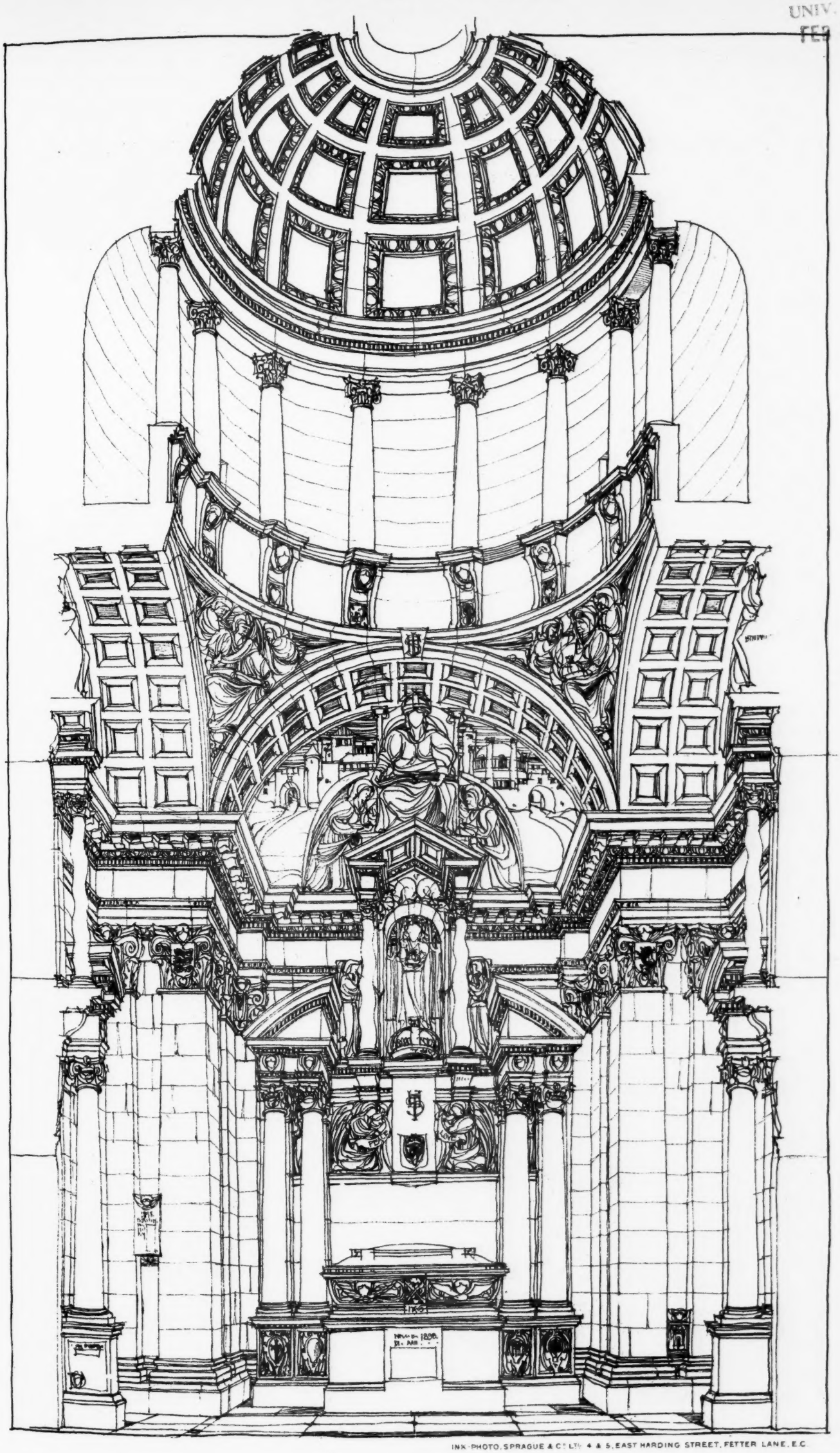
INK-PHOTO. SPRAGUE & Co LTD 4 & 5, EAST HARDING STREET, FETTER LANE, E.C.

EXTERIOR PERSPECTIVE.

DESIGN FOR A ROYAL MAUSOLEUM.—By Mr. Jas. B. Fulton

Tite Prize, R.I.B.A., 1899.

GENERAL LIBRARY,
UNIV. OF MICH.
FEB 17 1899

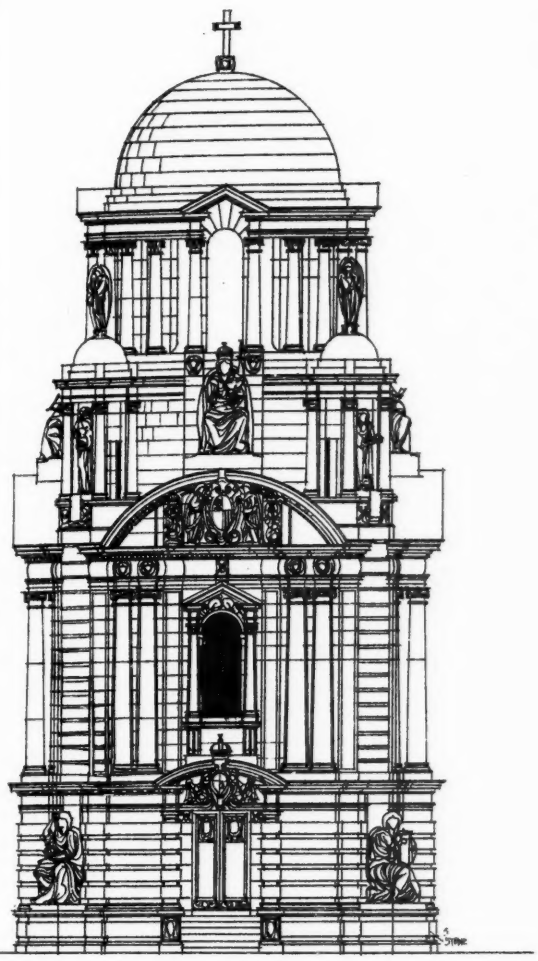


INK-PHOTO. SPRAGUE & Co LTD 4 & 5, EAST HARDING STREET, FETTER LANE, E.C.

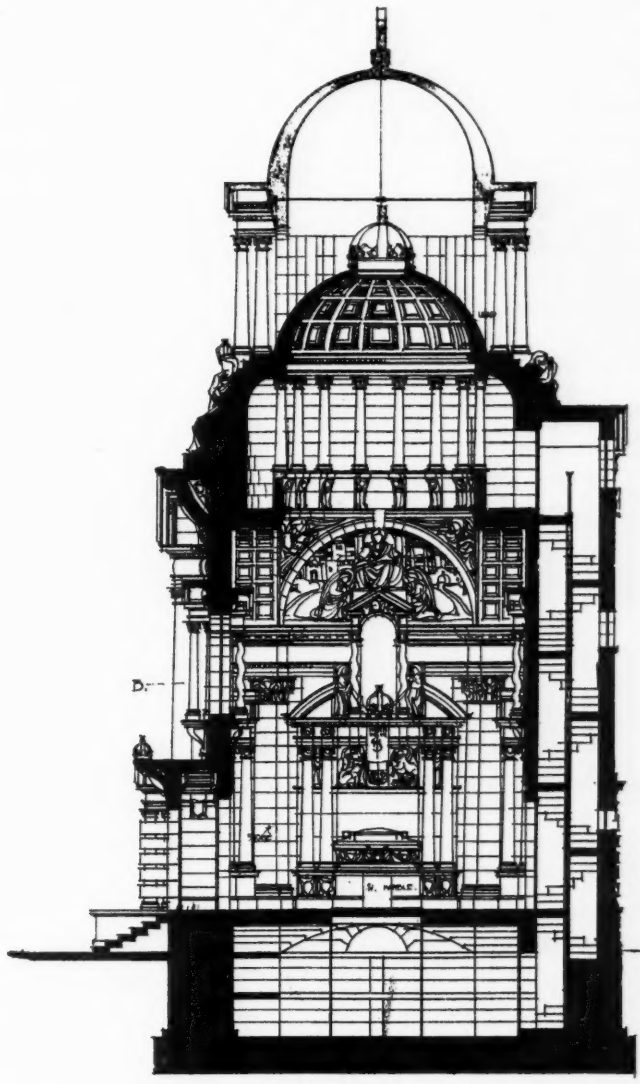
INTERIOR PERSPECTIVE.

DESIGN FOR A ROYAL MAUSOLEUM.—By Mr. Jas. B. Fulton.

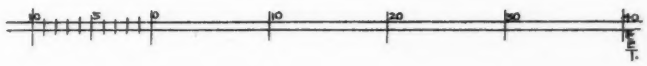
Tite Prize, R.I.B.A., 1899.

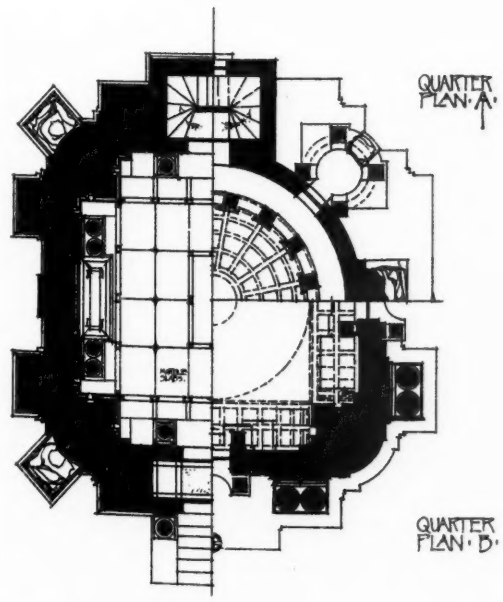


ELEVATION.



SECTION.





PLAN.

DESIGN · FOR · A · ROYAL · MAUSOLEUM.

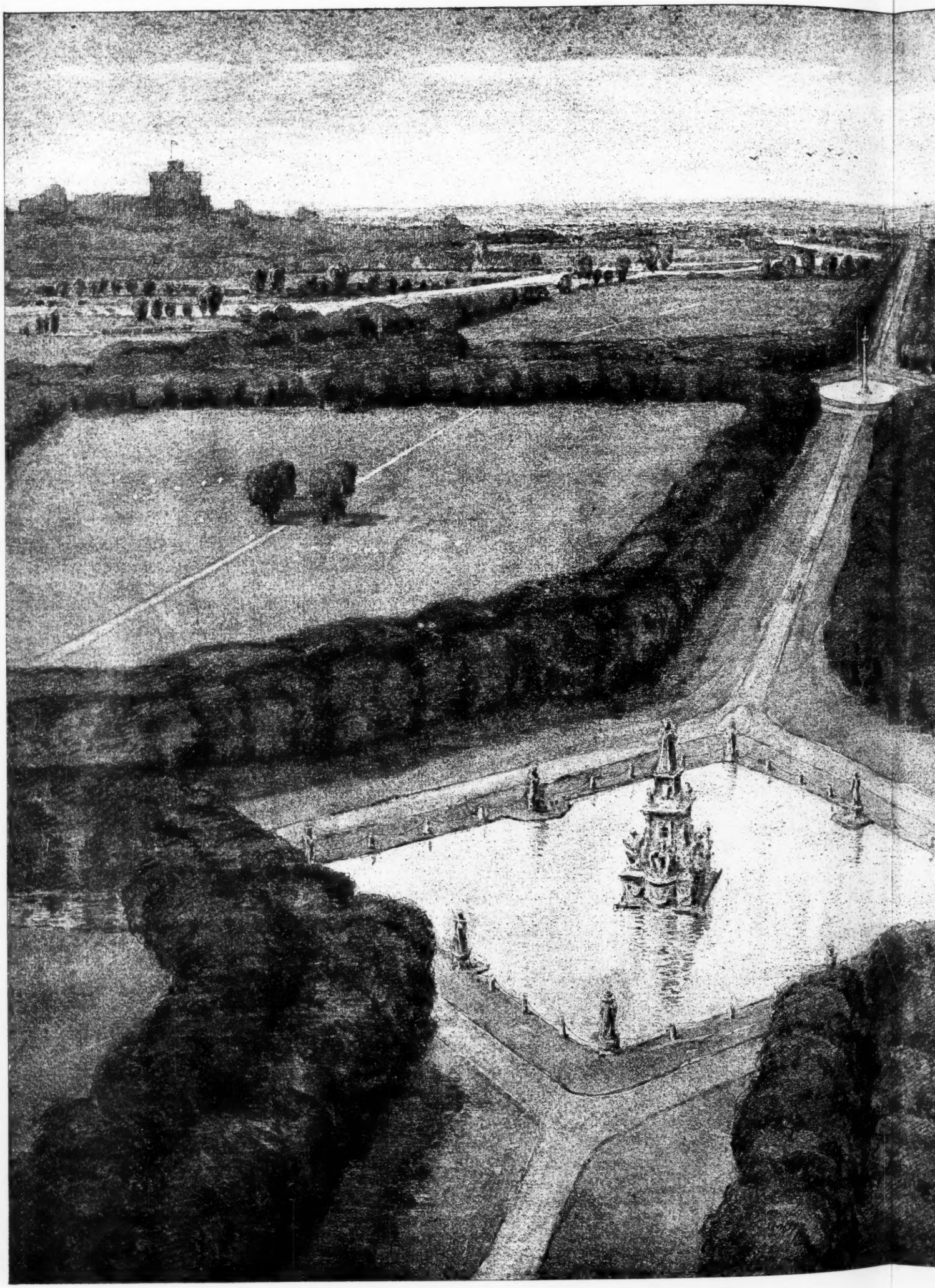
PHOTO-LITHO. SPRAGUE & Co. Ltd. 4 & 5, EAST HARDING STREET, FETTER LANE, E.C.

Tite Prize, R.I.B.A., 1899.

ELEVATION, SECTION AND PLAN.

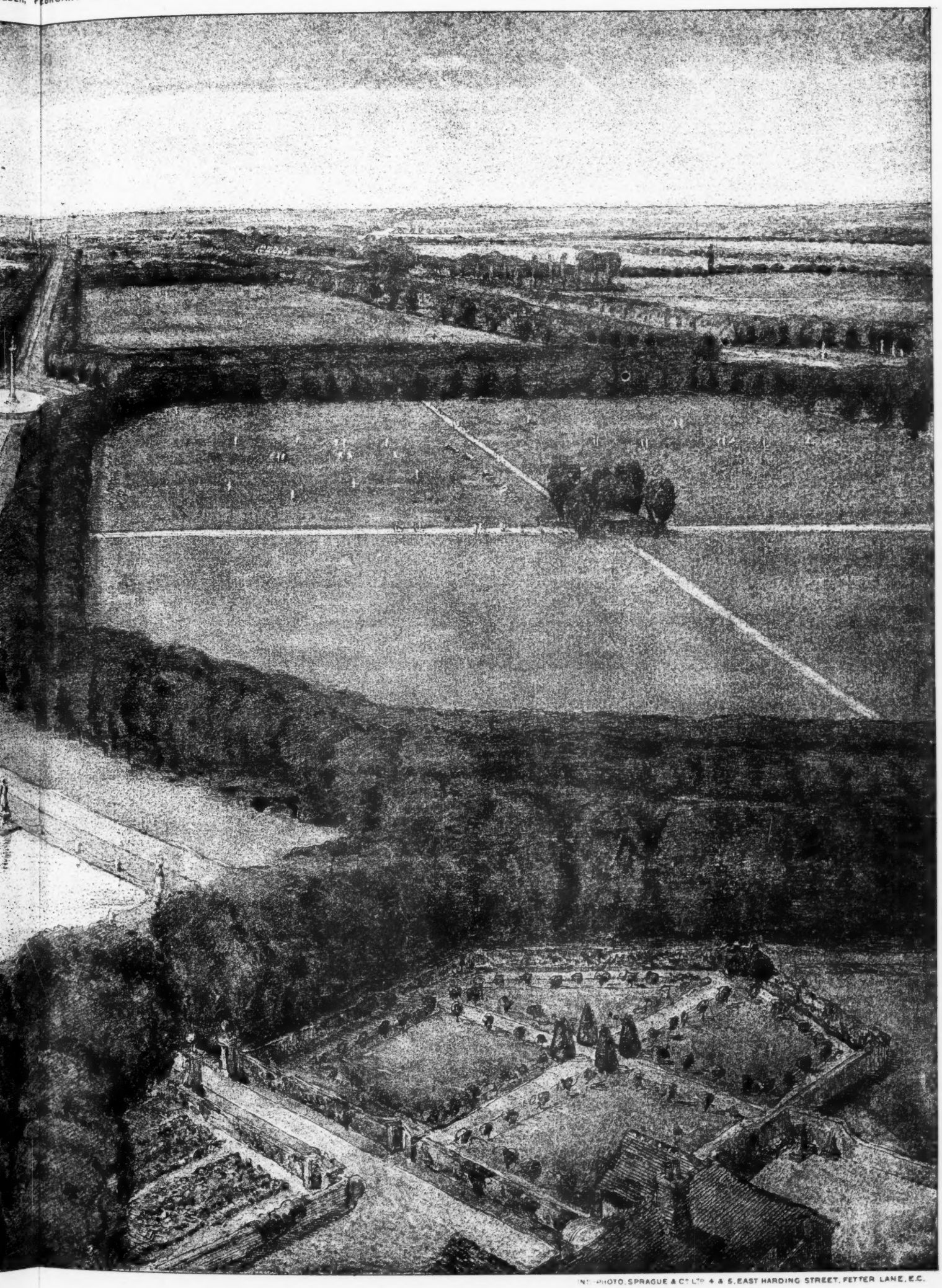
DESIGN FOR A ROYAL MAUSOLEUM.—By Mr. Jas. B. Fulton.

PHOTO-LITHO. SPRAGUE & Co LTD 4 & 5, EAST HARDING STREET, FETTER LANE, E.C.



SCHEME FOR THE NEW PLAYING-FIELDS, ETC

GENERAL LIBRARY,
UNIV. OF MICH.
FEB 17 1899



INTERPHOTO. SPRAGUE & Co LTD 4 & 5, EAST HARDING STREET, FETTER LANE, E.C.

G-FIELDS, ETON COLLEGE.—By Mr. F. Inigo Thomas.